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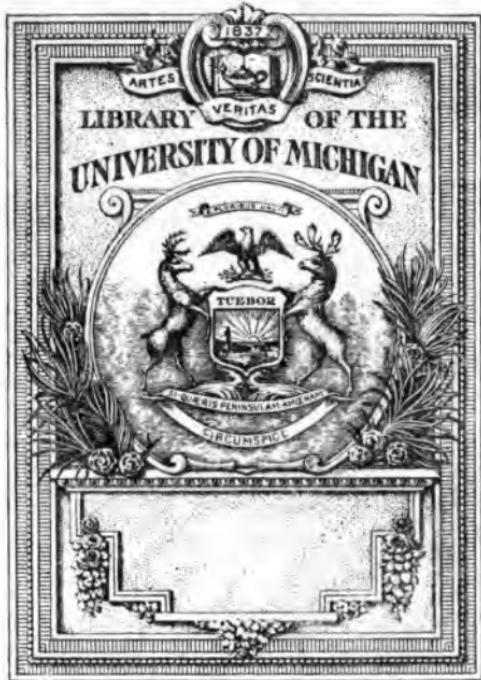
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# *Industrial Preparedness*

KNOEPPEL



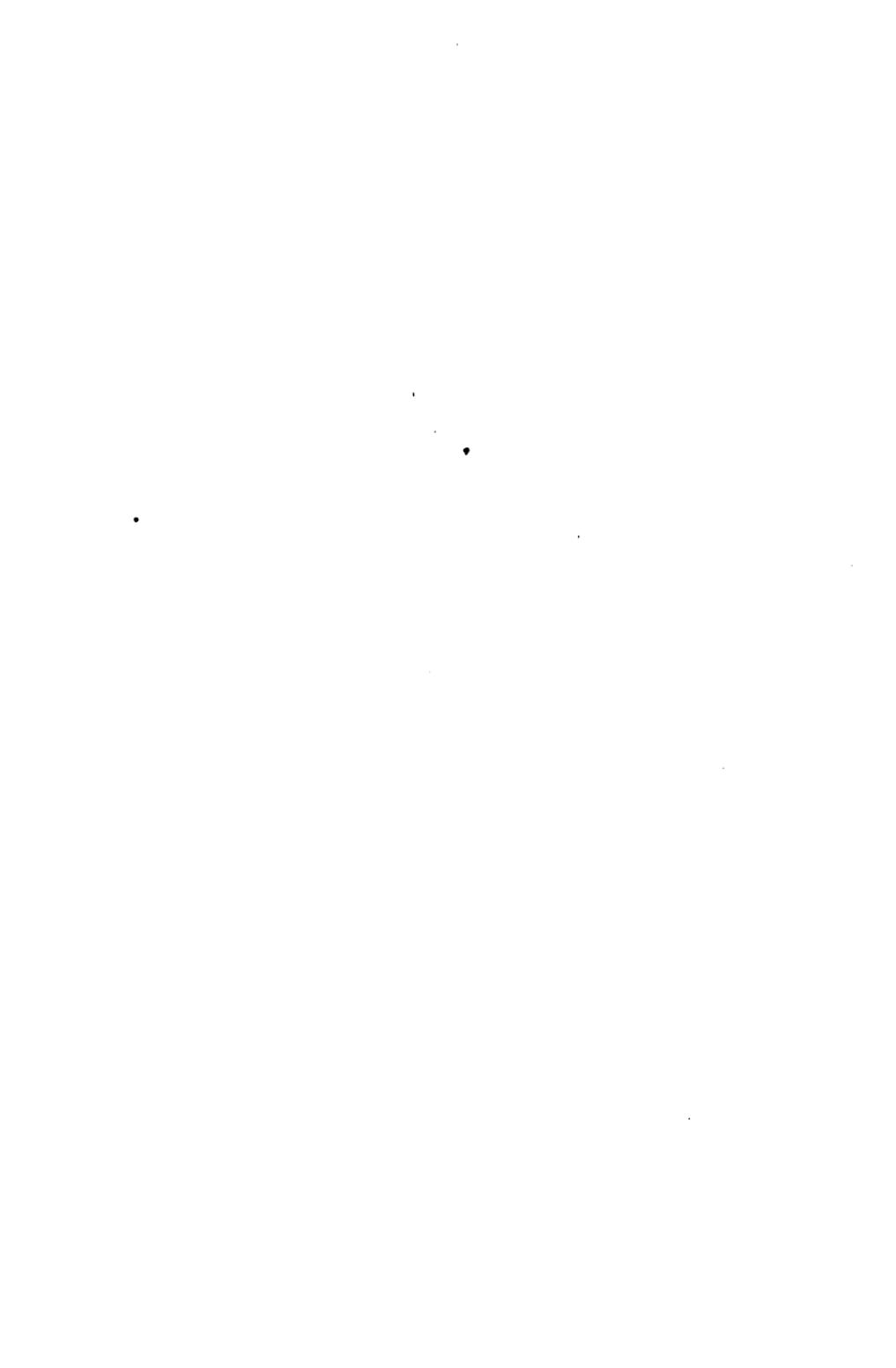
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# INDUSTRIAL PREPAREDNESS

Up

BY

**C. E. KNOEPPEL**

Author of "Maximum Production in Shop and Foundry," and  
"Installing Efficiency Methods".



**NEW YORK**  
**THE ENGINEERING MAGAZINE CO.**

**1916**

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FROM COLONEL THEODORE ROOSEVELT

With Mr. Knoeppel's general purpose and with what is generally set forth I not only heartily agree, but feel that he is dealing with the problem which—more than any other—immediately concerns this people. As Mr. Knoeppel says, "I do not agree that inefficiency is not the people's error. *It is. . . .* The nation must get out of politics and go into business." The keynote of Mr. Knoeppel's book is furnished in the two sentences: 1. That we need preparedness against war; 2. That we need preparedness against industrial inefficiency and industrial unrest and warfare.

I welcome the appearance of this book.

THEODORE ROOSEVELT.

Oyster Bay, N. Y.  
May 19, 1916.

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## FROM MAJOR-GENERAL LEONARD WOOD

I am in entire accord with Mr. Knoeppel's views as to the necessity of thorough preparedness. Without it we can never attain real military efficiency in these days when the battlefield is filled with men fighting, not only with the ordinary weapons of war, but with almost every mechanical device and chemical resource which man's ingenuity has brought to his aid. Preparedness for modern war means not only the training and organizing of men, but the most thorough and complete organization of the industrial resources of the nation. And behind this must be a thorough moral organization of the people, an organization founded upon a loyal acceptance of the basic principle upon which democracy and representative government rests, and that is that equality of obligation must go hand in hand with equality of opportunity, or, to put it another way, that with the rights of citizenship go its responsibilities.

This nation has never seriously considered organization for war, or, better said, against it. And there is not and never has been any

well thought out plan for organizing the industrial resources of the nation so that they may give the maximum of national efficiency in time of peace and the maximum of support for the fighting line in time of war. To meet the conditions of modern war nothing must be left to chance. No miracles are going to be worked except by the combatants themselves. The strength of a nation is represented only in part by the fighting line; the mobilization of industry, of transportation and communications behind the fighting lines are the forces which serve to renew that line and give it strength and power.

We are believers in arbitration and are lovers of peace, but unless we are blind we know that the first is not of general application and that the latter is often not attainable except through struggle.

What we desire in this country is the highest degree of organization, moral and industrial, accompanied by the training of our men. With this training will come better men physically, better men economically, and better men morally. And out of it all will come a condition offering the strongest possible insurance for peace and the greatest possible effectiveness in the great industrial warfare, the struggle for trade. This is as keen and relentless as the struggle on the battlefield, and is a struggle which, when it



well thought out plan for organizing the industrial resources of the nation so that they may give the maximum of national efficiency in time of peace and the maximum of support for the fighting line in time of war. To meet the conditions of modern war nothing must be left to chance. No miracles are going to be worked except by the combatants themselves. The strength of a nation is represented only in part by the fighting line; the mobilization of industry, of transportation and communications behind the fighting lines are the forces which serve to renew that line and give it strength and power.

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reaches a sufficient degree of intensity, takes up in addition to the implements of industry the weapons of war. The combatants will use both, and whichever combines them with the greatest degree of skill will win, other things being approximately equal. It is but an illustration of the application of the general law under which we all live, the law of the survival of the most fit, brutally harsh and uncompromising as it is.

If we have anything we believe worth defending, whether it be country, religion, institutions, or convictions, we must prepare to defend them with force. To do this successfully in these days of complete organization on the part of all the great nations of the world, excepting China and ourselves, means thorough organization; and in considering such an organization we must remember one thing, that organization requires time and that time cannot be bought with money.

LEONARD WOOD.

Governors Island, N. Y.  
May 26, 1916.

Leaving out of consideration the banking, railroad and public utilities corporations, and referring only to those that have to do with trade and industry, we find that there are about 250,000 business corporations in the country. The astonishing fact is that over 100,000 of these report no net income whatever. In addition 90,000 make less than \$5,000 a year, while only the 60,000 remaining, the more successful ones, make \$5,000 a year or more. In tabulating the data for these large and successful corporations in the United States, comprising all the corporations doing business of more than \$100,000 a year, we found that nearly one-half charged off no depreciation.

2. According to the report of the Industrial Relations Commission 35,000 workers are killed and 700,000 injured yearly, and each one of the thirty million workers in the country loses nine days a year through sickness, causing them a loss of about \$700,000,000 yearly.

3. Carrie Chapman Catt says that of the millions of pupils entering our grade schools yearly, one-half never finish the course, only five per cent. enter the high schools, only one-eighth of one per cent. go to technical schools and about four-fifths of one per cent. get a college training.

4. It is reported that three-fourths of the

male wage earners in the United States earn less than \$600 per year, and that the 8,000,000 women workers, two-thirds receive less than \$8 per week and one-half less than \$6 per week. But on the other hand, there are 1,600 American fortunes yielding \$100,000 or more and 44 yielding \$1,000,000 or more yearly.

5. Our average unemployment is fourteen per cent., as against six per cent. in Great Britain and only two per cent. in Germany.

6. According to Frank P. Walsh, there are 5,000,000 men in this country whose labor is so casual that it borders on vagrancy.

7. According to Doctor Rupert Blue, Surgeon General of the United States Public Health Service, 600,000 people die annually in the United States from preventable diseases, and of the 300,000 infants that perish annually, one-half could be saved by measures within the reach of every community.

8. We have 2,250,000 farmers striving for a bare existence on farms of less than fifty acres, while four-fifths of the 50,000 owners of large areas hold their land out of active service.

9. Our average annual fire loss is \$200,000,000, or enough to build forty battleships, each costing \$5,000,000. And Harrington Emerson estimates that the railroads of

the country waste annually \$300,000,000, or enough to build sixty more battleships.

10. The Industrial Relations Commission reports that sixty per cent. of the total wealth of the United States is held by only two per cent. of the people; while the poor class, sixty-five per cent. of the people, hold only five per cent. of the wealth.

11. Of the 41,168 applicants desiring to join the United States Marine Corps in 1915, only 9.31 per cent. were accepted, the balance being rejected as physically unfit. New York City had the lowest acceptance, 2.87 per cent.

12. The following is from an editorial in the *Manufacturers' Record*, October 28, 1915:

Practically the entire production of munitions of war and facilities for building and docking warships are concentrated in a narrow strip of territory from Connecticut to Virginia. In this little strip, 200 or 300 miles in length and extending on an average probably considerably less than 100 miles into the interior from the coast, our gun making plants, our armor making plants, our shipbuilding concerns, our powder making interests are all closely concentrated. It is conceivable that this limited area might at some time in the future be under control of an enemy, and if this should ever happen before these conditions have been changed, the rest of the coun-

try, probably 95 per cent. of its area, would be absolutely helpless, as it would be without arms or the facilities for making arms, building ships or equipping them if they were built.

13. Mrs. Charles O'Hara Craigie, in an address before the National Democratic Women of America, stated that the *United States is twenty-five years behind other nations*, with which we are in open competition, in the training afforded by the vocational schools which turn out the skilled industrial workers.

14. Howard E. Coffin, chairman of the Committee on Industrial Preparedness of the Naval Consulting Board, writing on "Our Industrial Preparedness" in *Leslie's Weekly*, says:

A foreign officer in New York on purchasing business for his government, told me not long since that the results of the whole war had been very seriously influenced through the failure of American manufacturers to deliver rifles on contract time. . . .

One firm which took a contract for a large number of rifles worked for more than 12 months before turning out a single rifle that would pass inspection.

Another firm contracted to machine 250,000 three-inch shells, the forgings being furnished, and the

fuses to be set and the shells loaded elsewhere. This firm estimated that it could finish the job in 8 months. At the end of 14 months it had delivered barely half the order. The contractors had no trouble with the lathe work, but were unable properly to heat-treat the machined forgings.

In another case 80,000 shell casings were rejected in one batch because an apparently insignificant variation in dimensions rendered them useless. It was a small matter, but one about which the manufacturer did not know.

15. Hon. John B. Olmstead stated that in one year 237 out of 364 electric railway, light, heat, and power companies, reporting to the New York Public Service Commission, *paid no dividends*. Out of 78 steam roads only 27 paid dividends.

16. George Creel, in *Hearst's Magazine*, says that in the past fifteen years we have spent fifty per cent. more on our navy than Germany and sixty per cent. more than France, with both navies ahead of ours in effectiveness. Our appropriations for army and war purposes exceed those of Germany by \$50,000,000 and of France by \$150,000,000, yet the German and French armies on a peace basis are *eight times greater than ours*.

17. According to Congressman Clyde Tavener of Illinois, we pay \$439 per ton for

armor plate which, according to experts, could be manufactured for \$230 a ton. He also points out that the 3.8-inch common shrapnel is turned out in the government factories for \$7.94 as compared with \$17.50 when made by private concerns.

18. When war broke out France had 1,400 aeroplanes and Germany 1,000. *While we had 23.*

19. According to Frederic C. Howe, there was a *decrease* in Mississippi River shipping of thirty-one per cent. in 1906 over 1889, while Rhine shipping passing Emmerich *increased* four hundred per cent.

20. There were less goods shipped in American bottoms from the Port of Boston in 1915 than in 1810, according to Edward F. McSweeney, of the Board of Port Directors.

These are ugly pictures, damning evidence of the existence in this country of a "mutual admiration society" which has either failed or refused to consider the rottenness of some of the conditions in our midst. And yet we talk of military preparedness as glibly as we do of spending \$50,000,000 in "pork" items.

Edison well says:

After the European war preparedness agitation here will die out, and then war with us will be a walkover for some nation.

## CHAPTER II

### AFTER THE WAR—WHAT?

When the war shall close the public control of railroads in foreign lands, the semi-official chambers of commerce, the publicly fostered organizations which control great industries in some countries will all exist and will be used in an effort to recover lost commerce.—HON. WILLIAM C. REDFIELD.

THE European war will end—when, we know not, but end it will—and when the end comes, we are bound to be confronted with problems of adjustment—problems which should be receiving attention *now*, not after the war is over.

We in America must recognize these definite facts:

1. When the soldiers of the warring nations lay down their arms after peace is declared, there will be a mobilization of money, men, materials and machinery, and an economic or commercial war will begin. The nations at war are even now getting ready for it.

2. There will be a gigantic awakening in

Europe when the 15 to 20 million serious-minded, bitter and determined men in the trenches, who have been through all the horrors of Hell, return to civil and industrial life with new conceptions, gained through daily contact with organization, control, and discipline.

3. The necessities of this war are forcing England, France, Russia, and even Germany to a kind of industrial efficiency never before dreamed of; to undertaking and accomplishing things which were thought impossible of attainment before the war and which will be carried on after it is over.

Just study those statements for a moment, keeping in mind the following from "After the War" by Thomas O. Marvin, President of the Home Market Club:

The United States will be the fruitful garden toward which the eager eyes of Europe will be turned. Here will be the gold that the wasted treasures of Europe will most earnestly seek. The economic problems which will arise will require the wisest statesmanship that the country can furnish. In the face of the nation's need, economic theories, purely Utopian in character, must be abandoned and industrial defense must be provided in the same patriotic spirit that prompts the steps that are being taken to secure military preparedness.

There are still other sides which demand consideration. The military critic of the *Paris-Midi* has said:

The United States is doing a big business now. This rapid enrichment will be one of the most powerful world factors after the war. The American Republic is no longer an importer of foreign capital. To-morrow she will be exporting gold.

Thus she will have greater wealth to defend and her increased armaments are a logical necessity. She must become the dominant country of the American continent. Such growth will give disquietude to British Australian colonies and to Japan, whose navy is intact and who may well become jealous of American ascendancy.

And the statement by Archibald Hurd, naval expert of the *London Daily Telegraph*:

If the triumph of our cause is accompanied by the improvement of the nation to such an extent that it can no longer maintain an unchallengeable fleet—and that is a possibility, for naval power is likely to become more costly owing to the awakening of the United States—we shall emerge into the new era no longer the greatest sea power in the world. And if our sea power goes, it will not be long before we shall shed other attributes of our greatness.

Think as you will, a careful study of the subject, the consensus of opinion of the great thinkers of the country, and an analysis of the foregoing, all point to but one thing: *We must put our house in order.*

Especially is this so when we consider the fact that after the war, if there is no decisive victory, and the indications are that the war will end in a draw, there will be four groups of nations: The allies, with England the dominating factor; the Teutonic powers, with Germany the guiding spirit; the Orient, with Japan as the leader; the Pan-American nations, with the United States as the leader.

In other words, the contest for the world's trade, for industrial and commercial supremacy, will be waged between England, Japan, Germany, and the United States. Does anyone dare predict that this economic struggle will never lead to a military clash?

The situation is eloquently summed up by Roland C. Usher, in his new book, "The Challenge of the Future," and is of such significance as to merit the attention of every thoughtful American:

This approaching peril threatens nothing else than our degree of profit in business, our desire to trade at will in the most favorable markets, our ability to expand our industrial fabric at the maxi-

mum rate. It is economic, contingent, impersonal, indirect. It is nothing more recondite but nothing less serious than the normal working of normal economic forces, which, because of our economic inferiority, act invariably to our disadvantage and in favor of European nations. Positive losses we shall suffer; entirely tangible difficulties will arise in the path of American merchants; opportunities to develop our trade in certain quarters we shall in some apparently mysterious manner be unable to obtain. Not only is this danger inevitable and inescapable; it is in the highest degree serious and will not unlikely, in coming years, affect adversely the prosperity and happiness of every man, woman, and child in the United States.

Not a bright outlook for this "the greatest nation on earth" as we were taught and as we teach our children, is it? What is the answer? Let Roosevelt give it to us in his characteristic style, as contained in a recent issue of *Metropolitan*:

There can be no real preparedness to perform our duty in time of war unless there is preparedness to do our duty in time of peace. Of course the most important of all types of preparedness is that of the spirit of the soul. This comes first if we are to get the proper social and business preparedness. But it must express itself through social law for corporations and business preparedness; and further-

more, although this preparedness in and for peace must lie at the bottom of military preparedness, yet it is useless unless guarded by preparedness against war. Social and industrial efficiency go hand in hand with military preparedness.

In contrast to England is Germany. Germany founded her military efficiency on industrial organization. Her industrial organization, however, is founded upon military principles. Our job is to secure the German result of unity and efficiency, but to secure that result in line with American traditions and American ideas, to secure it as a result of cooperating free men; and to secure it without producing the psychology which in Germany has been a source of such dreadful world evil.

Let us study carefully what she has done, and then develop and adapt to our own needs the schemes which she has found successful, supplementing them with whatever additional measures our own experience may indicate as advisable.

Let us, therefore, follow the suggestions and consider what it is that Germany has done; first, along military lines, and then along industrial lines, and from this analysis determine for ourselves the things which we can learn from her and adapt to our needs, and, having found them, put them into effect in the aggressive and snappy manner of which the American is capable.

## CHAPTER III

### THE GERMAN MILITARY ACCOMPLISHMENT

In this mighty war game, whose board is the whole world and whose squares are kingdoms and continents, the German military leaders move their figures like chess men and one opponent after another is checkmated.—SVEN HEDIN.

THE European war is the greatest example of efficiency on the one hand, and the lack of it on the other of this or any other time. Regardless of whether our sympathies are with the Germans or the allies, regardless of whether the Germans are right or wrong in this war, and without considering the methods they use to achieve their ends, all must admit that they are showing the rest of the world an *efficiency* both as to organization and methods that is nothing short of marvelous.

At the outset, I wish to disarm the natural suspicion of the reader, who might say after looking at the name of the writer, "Oh!—he is a German." I might have followed the suggestion of Dr. Melville Dewey, who ad-

wised me to spell my name "Nopl" and in this way guard against this possible accusation. I was born in this country, however, as was my father before me. My ancestry is as much French (Requa) as German (Knoeppel), so if racial tendencies account for anything, I should be fighting with myself. In connection I wish to say that I am not predicting that the Germans will win—it seems, in fact, impossible, considering the odds against them—nor do I want to be considered as even favoring the German cause, for I am trying to be neutral like every real American. I do want to impress, however, that while the German nation and thought may be one thing, the German method is distinctly another, and it is with this which we, as a people, should be most concerned, not letting our likes or dislikes run away with our judgment.

Before discussing the present war, however, let Harrington Emerson tell us in his characteristic style some of the things he learned from the Franco-Prussian war, as contained in his book, "Twelve Principles of Efficiency":

It is not the pomp and glory of that campaign that appealed to me as I intimately and personally, both in Germany and in France, watched it from

start to finish, for there was little of either; but the calm, merciless skill of the play showed me what principles could do when carried into effect by a suitable and competent organization. It was not the German soldiers who won the war; von Moltke would have won equally well had he applied his principles to Italian, Austrian, French, Russian, Japanese or Americans. The German recruits were not enthusiastic, and were below the European average in martial enthusiasm and spirit. It was not the German drill or tactics that won the war—mere methods, both long ago superseded. It was not the German equipment—mere devices—that won the war. The French *chassepot* was a better gun than the German *Zundnadel*, and the *mitrailleuse* was a better field piece than the Germans possessed. It was not German money that won the war, for France was at once far richer and had far better credit.

It was von Moltke's principles and organization that won; and a generation later the same organization and principles applied by a different race on the other side of the globe produced exactly the same fruit in very similar manner, under other able men.

A true conception of the gigantic proportions of this conflict is in order before we can really judge the accomplishments of the Germans, first, from the standpoint of money

and also of odds against the Central Powers.

In terms of money the following comparisons stand out:

Three days of the war would build the Panama Canal.

Eight days of the war would rebuild Boston.

The wages of all the workmen in the United States for ten months would run the war but two weeks.

All the money in the savings banks would carry the war only one month.

The cost of the public schools in 1913 would carry the war less than one week.

The cost has exceeded the expenses of the United States for its 128 years as a nation.

As regards odds against the Central Powers, the following compilation made public by Brigadier-General Francis V. Greene, U. S. A., before members of the N. Y. State Historical Association, will prove interesting:

Wealth of Allies.....\$204,500,000,000

Wealth of Central Powers..... 108,000,000,000

Relation 1.9 to 1.

Population of Allies—Europe..... 266,500,000

Population of Central Powers—Europe 122,200,000

Relation 2.1 to 1.

Population of Allies—Colonies..... 472,500,000

Population of Central Powers—Colonies 32,800,000

Relation 14.4 to 1.

Armed war strength—Allies.....	7,940,000
Armed war strength—Central Powers..	5,260,000
	Relation 1.5 to 1.
Naval strength in tons—Allies.....	4,780,000
Naval strength in tons—Central Powers	1,750,000
	Relation 2.7 to 1.

*Note:* Bulgaria is not included in the totals for the Central Powers.

As to size, approximately seventy-five per cent. of the population of Europe is at war, or, to put it another way, fifty per cent. of the population of the world is engaged in this conflict in one form or another. Practically 20,000,000 men are under arms, with more being recruited and trained.

The latest estimate of the cost is \$100,000,000 for both sides per day, or \$36,500,000,000 per year. As the combined wealth of the nations at war is \$312,000,000,000, this means that these nations are spending yearly an amount equal to nearly twelve per cent. of their wealth.

With this conception of what this war really is, let us take up the question of accomplishments. After twelve months of the war, David Lloyd George said: "The iron heel of Germany is sunk deeper than ever into French and Belgian soil; Poland is entirely German; Lithuania is rapidly follow-

ing. Russian fortresses deemed impregnable, are falling like sand castles before the resistless tide of Teutonic invasion.”

In a more detailed way, Germany has been taking the initiative on all sides. At the outset she subjugates Belgium and starts a drive toward Paris; then retreats, and taking the defensive, digs herself in, in such a thorough manner that despite the fierce allied offensive of some months ago, she is in an almost impregnable position, as indicated by the following dispatches:

New York, December 24.—General Joffre spared no pains in vigorously forcing his views on the British cabinet and the general staff. He told them plainly that the battle of Loos had had no practical value whatever. In his opinion the results attained were in no way commensurate with the expenditure of life and munitions. According to Joffre the position on the West was a stalemate, and hope of any real success was next to impossible. The only hope was to make a great effort by way of the Balkans.

Brookline, December 6.—Reverend Van Ness interviewed many soldiers in British hospitals, and from them gained an impression that the German position on the Western front is impregnable.

**Germany was on the defensive in Russia at the start of the war, then took the offens-**

ive, and, in the campaign which followed, captured ten of the most productive Polish provinces and six of the most valuable provinces in European Russia. To relieve Turkey and lift the siege of Constantinople, she conquered Serbia and opened the road to Turkey, forcing the allies to abandon for the present the capture of the Gallipoli peninsula, after which she forced the allies, who were sent to assist Serbia, to retreat to Saloniki and fortify it against a possible and no doubt expected invasion.

It is nothing but a gigantic chess game, with Germany making the strongest and most vigorous plays; for behind it all you find the German direction, the German organization, the German planning, and the German resources. Surely, the study is worth while and easily rivals a tale from the Arabian Nights.

Take the question of officers, for example. With an uncanny foresight and a skill almost devilish, the Germans have trained sharpshooters to pick off English officers, and the individual initiative and courage of these officers simply made it all the more easy for the Germans. On the other hand, you find German officers assisting the Austrians, transforming the weak Turk into a fighting man, and making the fierce fighting Bul-

garian all the better through German direction.

Look at the general conduct of the war for a moment. In the French, Russian, and especially the British cabinets, there has been conflict, criticism, abuse, and repeated changes. Von Moltke is still Chief of Staff at Berlin, and von Falkenhayn, Chief of Staff in the field. Sixteen months after the start of the war the Allied Powers sent representatives to the first General War Council held in Paris for the purpose of bringing about closer cooperation among the Powers in military operations.

You see Joffre going to London and forcing Britain to change her plans, as indicated by the following dispatch:

New York, December 24.—Oppositions to these views were exceedingly strong at first, but Joffre battered down all obstacles and ultimately was allowed a free hand. Consequently, the British troops on the way from Gallipoli were diverted to Saloniki where they are now being landed.

You see the British starting the Dardanelles campaign and finally, concluding that it would be sheer madness to make further attempts to pierce the Turkish positions, withdrawing three-quarters of their troops

and transferring them to Serbia and France. The allies, it will be remembered, go to the relief of stricken Serbia, but arrive when it is too late, due to the swiftness of the German and Bulgarian advance, and are forced to retreat to Saloniki, destroying their own property as they retire.

Take generalship for another example. Is there one allied general who compares in accomplishment with von Hindenburg, or von Mackensen, or von Kluck? It is, of course, true that Grand Duke Nicholas, in his retreats in Russia, and General Joffre, in holding the Germans in France, are entitled to great praise for their strategy, but the real strength from the standpoint of rapid advance, vigorous action, and smashing tactics is certainly with the German generals.

What Germany has really accomplished can be best appreciated by showing, not the amount of territory captured, but the resources it has gained in this territory, as follows:

Belgium:—practically all resources.

Serbia:—same as Belgium.

France:—coal, 69 per cent.; iron ore, 90 per cent.; pig iron, 86 per cent.; textiles, 69 per cent.; or, in other words, 43 per cent. of the total resources.

Russia:—25 per cent. of the coal output; 20 per cent. of the weaving mills; 10 per cent. of the flax industry; 6 per cent. of the hemp industry; 10 per cent. of the iron and steel industry; 33 per cent. of the potato acreage; 14 per cent. of the live stock; 16 per cent. of the railways; nearly all of the zinc and copper; and a large extent of the oil fields in Galicia.

Let us look at the Balkans for a moment. In every sense of the word, this drive was a master stroke, for it accomplished five things: it relieved Turkey; forced the abandonment of the Dardanelles campaign; eliminated Serbia; blocked any possible offensive through the Balkans; and exerted a powerful influence on Greece, Rumania, and the Far East.

England fully realized the seriousness of the Balkan struggle. The London *Morning Post*, during the Serbian campaign, quoted the views of Seton Watson, the well-known authority on the Balkans, as follows:

If Serbia went under, it would mean that the route would be open to Germany to supply men and munitions to Constantinople to arm against us the 500,000 or 700,000 Turks who still could not be

armed at home. Turkey would be saved. The Dardanelles would go. The position would be untenable unless Serbia, and we with her, hold the breach. The news would run like an electric flash through the entire East, our prestige in Egypt would be gone. Our position in Mesopotamia would be threatened. Every bazaar in India would ring with the news and Persia would be in arms.

If Serbia went under, Germany would get all the cotton of Asia Minor, all the oil of Persia, all the copper of Serbia and also corn. To talk of a war of attrition after that is an absurdity. It would also deprive us of the real field of a promising offensive through the Balkans and Austria Hungary.

An example of German accomplishment is shown by the manner in which the merchant fleet was saved just before the war. Germany's chain of wireless stations in all of her colonies cost her \$10,000,000. Godfrey Isaacs, managing director of the Marconi Wireless Telegraph Company, Ltd., at its annual meeting in London, said:

In the light of what subsequently happened, you will probably say that it was a very bad investment; but you would be mistaken. You will remember that this country declared war on Germany at midnight of August 4 last. At five o'clock in the afternoon of August 4, Germany sent out a message to all its

wireless stations, which passed that message on from one to another, and sent it out to sea, covering a radius of something like 2,000 miles or more—a message to this effect: "War declared upon England. Make as quickly as you can for a neutral port." By that message, which occupied but a few minutes, Germany contrived to save the greater part of its merchant mercantile marine. If it had but saved one of its big ships—the *Vaterland* or any one of that class—it would have paid for the whole cost of these wireless stations. We all know that it was a deal more than that, and that it did a great deal more than send this message to its mercantile marine.

The German method of laying railroads is another example, as will be seen from the following dispatch:

Paris, November 30.—The remarkably effective system of railways and telegraphs which the Germans have constructed to connect with Field Marshal von Hindenburg's forces along the Riga-Dvinsk front, is described by Charles Rivet in a dispatch to the *Temps* from Petrograd. He says that the Germans have given full scope here to their genius for organization and that their railways have excited the admiration of all who have seen them.

These lines are brought from the rear to the front in pieces, like children's toys, and are immediately

linked together. Thus a network of rails extends behind the entire front. At the same time they have constructed three main lines from East Prussia to the Riga-Dvinsk sector. These lines have regular schedules and are open to the public. There also are electric tramways connecting the small villages, notably around Poniewesch.

Similar efficiency has been shown in constructing telegraph lines in all directions.

The establishment of train service from Lille to Warsaw is still another example of accomplishment, as the following message cabled by the staff correspondent of the *New York Times* from Berlin on August 17, 1915, will show:

Lille-Warsaw express. These words record another German mechanical and technical triumph.

Eleven days after the capture of Warsaw, the military railroad officials have inaugurated a through train service, connecting the extremes of occupied enemy territory, leaving Lille at 6.40 o'clock in the morning, Brussels at 8.30, and Berlin at midnight, and arriving at Warsaw in time for luncheon the next afternoon.

The first trip of the new train eastward from Berlin carries a party of seven American war correspondents, including the *Times* representative, who

are going to witness the bombardment of Fort Novo Georgievsk.

The following extracts from a long article in the great Russian liberal paper, *Russkoe Slovo*, on "German Methods of Modern War," is a most eloquent testimonial to the remarkable *efficiency* of the Germans:

According to their custom, the Germans rush precipitately forward, and hardly have they occupied a new position when they fortify it in such a fashion that the forces necessary for the defense of what they have won can be reduced to the minimum. The trenches of the Germans are kept in remarkably good order and are relatively almost empty; every thirty or forty yards you find a machine gun. But behind the trenches, the movable stores of ammunition circulate, so that ammunition may be dealt out quickly where it is needed. This is always quickly at hand, and stored up, with all attendant confusion avoided. Never anything superfluous in the trench, but rather space, light, air, cleanliness.

At Libau, the Germans used gigantic automobile trucks in which liquid cement was brought up with which the trenches were strengthened and made proof against shells. These power trucks, too, had another use. They were equipped with great watertight containers which enabled the German soldier to have his weekly, or even daily bath.

These Germans keep their trenches as clean as they do their bodies. And then, too, we find in every German trench a broad board, which serves as a table. With us nobody ever had the idea. Our soldiers eat their food on their knees, throw bread-crums and bones on the ground, and even the remnants of their food. Thus our trenches are rapidly converted into great refuse pits. With the Germans it is quite different.

Again, they strive to have as few soldiers as possible in a trench; they don't want their soldiers to be exposed to fire needlessly. But they have telephone stands everywhere. At the slightest alarm the telephone goes into action, the German trenches being simply covered with a network of telephone wires. All commands are transferred by telephone, which means a great saving in officers, not only in numbers needed, but also in lines, for none are required for the transmission of orders.

So as not to lose any cannon, these Germans, again, make use of powerful motor trucks. Our officers were at first astonished; they would capture a German trench or German position, and would find there only a few German soldiers and no cannon, no machine guns, and no ammunition at all. What had become of it? It was only later that we learned that the Germans have heavily armored motor cars, which during the battle are stuffed full of ammunition; but at the slightest danger for the cannon—especially the heavy ones—these are hitched

with chains to the automobiles and drawn away, so that we are left to look on.

In short, with these Germans everything is provided for and everything foreseen, from the bread crust which must not be thrown away, to the sheet of letter paper which is handed out only at the right time. In fact, this is a war which the German has entered with all his soul, and at the same time with all his brains.

It is said that almost every copper kettle is in the hands of the German Empire. Even fruit seeds have been systematically collected and yield from 15 to 30 per cent. in oil when pressed. The claim has been made that the gas bomb is equivalent to ten thousand shrapnel shells. In the drive from Galicia, it is said that the Germans put three shifts of men at work in the mines and oil fields. They are extracting nitrogen from the air. A recent dispatch informs us that they have found a way to manufacture synthetic rubber. Wood pulp and other fibres have been substituted for cotton in explosives. They use benzol produced from coal for internal combustion engines. To feed their cattle they found a way of extracting fodder from straw. They inventoried everything eatable in the Empire, studied the demand, then matched the two. They supervised the pro-

duction of food and superintended the manufacture of munitions. You know of the German development of the sea-going submarine; the bringing out of the invisible gray uniform; the surprise caused by the use of the 42-centimeter guns.

This statement was made by the President of the Bremen Chamber of Commerce in an address to a convention of merchants, according to a dispatch dated February 25, 1916:

I have had the opportunity to establish officially that for eight months not a kilogram of cotton has been used for making powder. Thanks to the work of German science and industry, we have succeeded in winning from the immeasurable supply of German forests a cellular material which is cheaper and better suited for powder making than cotton.

The second important ingredient—salipteter—of the entire Chilean output of which we formerly took two-thirds, is now manufactured exclusively in Germany from the air.

Possibly the best exposition of German efficiency in warfare is contained in dispatches sent to the *New York Times* by its special correspondent, Garet Garrett, extracted as follows:

If a French army, invading Serbia, had found a copper mine out of which to increase a diminishing supply of that precious war metal, it is possible that the Government at Paris would have been prepared to begin working it at once. That would have been an instance of forethought for the French Army to remember with pride. But when the commander of the German Army in Serbia telegraphed to Berlin, "Have found a copper mine at \_\_\_\_\_; please send timber and engineers," he was not in the least surprised to receive within two hours the answer: "Timber and engineers already on the way." They had been waiting on the Austrian frontier for several weeks. The Government knew the army would find the copper mine, and the materials and the men to work it with had been sent three-quarters of the way to save time. All of which was taken as a matter of course. That is efficiency. For the Government not to have been ready beforehand—that would have been surprising.

If the English ran out of walnut lumber for gunstocks, somebody might know where a large supply could be obtained at once; somebody might have anticipated the problem, and that would be forethought, deserving to be complimented. But when the German supply ran low it could be taken for granted that it had been somebody's business to provide the solution, and that the answer awaited the question, "Where shall we find walnut?" In the files, under "W-Wa-Walnut" is the information.

Long before time military commanders had been requested to look for walnut trees in the territory they occupied and to report their position, size, and number. It is now a simple matter to telegraph to a commander in Northern France to cut down so many walnut trees and ship the logs, as per detailed instructions. And nobody is to be complimented.

Efficiency produces a state of preparedness. It bores with a very long auger. Before the fall of Warsaw preparations began to be made for the Balkan campaign. Military engineers were on the ground working out every problem that could be imagined. It was one man's sole business to get the German Army across a river at a certain place, on paper; another man's business to put it across at another point; another man's business to work out the gun ranges, from certain positions commanding the citadels of the enemy. He had not only to work them out on paper but to memorize them, backward and forward; so that months later it was amazing to the military attachés, observing the offensive against Serbia, to find a German officer directing the artillery fire out of his head, as if he were playing several games of chess blindfolded. When a German campaign is launched the parts all fit. They have been measured, cut, drilled, and numbered, like the structural steel shapes of a New York skyscraper's frame.

Efficiency has a passion for cleanliness, tidiness, hygiene, geometrical order, and the propagation of practical knowledge. It swabs and scrubs and then

polishes its conquered territory. In Poland more streets have been paved in a few months of German occupation than in perhaps a generation before. In one town, where the condition of the market place was disgraceful, the army set immediately to work removing the surface mud, in order to get a bottom on which to lay a pavement, and was astonished and disgusted to find a very good pavement already there. Efficiency, as a matter of course, saves its army from disease and discomfort, as well from the scourge of typhus in Serbia as from the scourge of lice in Russia, and at the same time it automatically protects both the army and the civil population of Germany from the most ghastly of human plagues hitherto springing from war like a devil's second harvest. Nobody thinks about these things in Germany except those whose business it is; all the rest take it for granted, and have therefore more time to think of other things.

For a few moments let us transfer our attentions from *efficiency in accomplishment* to *strength in resources*. In his book, "Through Terror to Triumph," a year after the war started, David Lloyd George said:

What is the actual position? It is thoroughly well known to the Germans, and any one in any land, belligerent or neutral, who reads intelligently the military news must by now have a comprehen-

sion of it. With the resources of Great Britain, France, Russia—yea, of the whole industrial world—at the disposal of the allies, it is obvious that the Central Powers have still an overwhelming superiority in all the material and equipment of war.

Read the following by an ex-U. S. Army officer, in the *New York Evening Mail* of November 19, 1915:

German resources! They are limitless. Her soil will produce food enough. Her mines and those of Belgium and Northern France will produce all the coal and iron needed. Galicia's oil wells will produce all needed gasoline.

Money! She needs none she cannot make. She is living up to the republican doctrine of a high protective tariff and a home market. Within herself she is sufficient unto her needs. England has to ship her gold to America to get food and munitions and arms, and thus is slowly but steadily being pushed to the verge of bankruptcy. The German gathers his money in taxes and then pays it back to the taxpayers by paying for the war goods that his people make; an endless financial chain.

The German government, with its monopolies and partnerships, is the biggest business house in Germany. The government monopolies in tobacco, sugar, oil and others, all help to bring all the nation's resources to the one hopper. England drains away

her heavy taxes to buy from us the things she must have. America thus gets it back.

The nation behind the war is worthy of a few words. Let the Hollander, who in the *Nieuwe Courant* of September, 1915, gave his impressions of his trip through Italy and Germany, tell what he observed:

I discovered neither famine nor lack of work; no people depressed and eager for peace. Although the newspapers of the Quadruple Entente had prepared me to find a shortage of soldiers, I could not see it. Germany continued to live its normal life. People bought goods, they kept on traveling, money appeared to be plentiful. There was plenty of luxury in evidence. Where the money came from, I am unable to say. To all appearances the war was bringing good business. The entire land seemed to me like a garrison. Everywhere, I saw new, trained soldiers. Not children, nor old men, but soldiers flushed with health and young manhood; men in their best years.

In spite of the tremendous efforts of the East, notwithstanding the numerous strength on the western front, there seemed to be not the slightest diminution in human material. The great result of the campaign in the East brought along a renewed national consciousness. No one could be found who did not believe absolutely that final victory would

fall to Germany. To be sure, many mourned the great losses sustained, but not a soul desired on that account to give up until fully victorious. The nation is even now preparing for another winter campaign. All submit to the inevitable, while resting complete confidence in the government as well as in the army leaders.

We may quarrel, if we will, over the question whether Germany had this war long in preparation, whether it wanted the war, or began it. But an organization that can display such national energy as Germany has done deserves notice. The individual, the masses, the whole nation have but one aim —victory. It is in the air; it vibrates throughout the atmosphere like the electrically-charged room affects the motors and the machines. The individual has nothing to say. Individualism is submerged. There is unity in thought, in feeling, in action. Here lies Germany's strength. Not in its howitzers, not in its submarines, not in new chemical discoveries, nor in the organization of production and distribution. All these are but manifestations; only instruments of use because of that tremendous force back of them—the marvelous energetic power of the soul of the German people.

We can admire this gigantic influence and power; hate it, or despise it, as we will. It cannot change the fact. This is what the allies must attack and tear asunder. The question is whether they possess the necessary means to accomplish this task.

You see the allies borrowing money from the United States as well as raising all they possibly can in their own countries. You see England loaning to those fighting with her, while Germany does her financing at home, the money going from one hand to the other and back again, so to speak. You see the allies spending their money like water for supplies and munitions, and, controlling the seas as they do, have the whole world to call upon for all they can pay for; while Germany, being blockaded by the allied fleets, can get in but little from the outside. Will there be a pinch in Germany? The factors are: food—munitions—men.

We have seen from figures and statements that the shortage, if any, will not be in men. Lloyd George told us of the superior advantage of the Central Powers in munitions. As to food, Austria-Hungary was practically self-supporting before the war, while Germany produced up to 80 per cent. of her needs. In iron and coal, Germany was better off than her opponents. Add to all this the resources of the captured territories of Belgium, part of France, part of Russia and Serbia; with markets of Bulgaria, Turkey, and the Orient now open to her, and the optimist will have a hard time figuring out how the Central Powers are going to fail to get

their minerals and supplies with which to make munitions and carry on the war. Between the oil fields of Galicia, the cotton-growing possibilities of Asia Minor, and the minerals of the Balkans, the Central Powers seem well fortified against a shortage in materials.

Look at it from another angle. With Germany, Austria-Hungary, the Balkans, Poland, and Turkey one vast economic empire dominated by German *efficiency* and German *kultur* (already fourteen German professors are to be assigned to the Turkish University of Stamboul to teach the Turks the culture of Germany) Germany will control Asia Minor and, with proper management and the wonderful railroads Germany can give, will be able to supply the whole of Europe with its needs. Improbable perhaps, but certainly not impossible if Germany wins, and nothing has transpired so far to indicate that she can be decisively defeated.

*What is behind it all?* Here is a group of nations outnumbered, outresourced, cut off from the outside world, accomplishing things which challenge admiration. The Germans, according to all logical reasoning, should be down and out completely—exhausted financially, agriculturally, and industrially in

minerals and in men. All who have followed the war to date know that all logical reasoning has been upset. If the war should end to-day Berlin would dictate the terms of peace.

Under date of April 2, 1916, Granville Fortescue, the famous war correspondent said:

The battle of Verdun foreshadows the crisis that brought about the conference (the conference of the Grand Alliance in Paris). Once again has Germany snatched the advantage of the initiative from her opponents, and by the smash on the Meuse has indefinitely postponed the long expected offensive in the West.

Nothing in history shows a parallel for the extraordinary manner in which Germany has taken advantage of the strategic value of interior lines.

That she was able to do this was due primarily to a central control of all the nation's forces. It is the lack of similar control that has operated against the grand alliance from the beginning.

Read the following by Sven Hedin, the famous Swedish explorer and author, dated Stockholm, March 1, 1916:

Therefore, from the first day of the war on, complete unity ruled. Above all nations Germany excels

in organization. Nothing is done hit-or-miss. Patience, calculation, foresight, all combine their forces for the common end.

Organization rules there in peace and in war, at home and at the front. At home, it provides for all the needs of the army. It is seldom that a transport column does not reach its troop promptly. The soldiers need not wait for their meals nor the artillery for their ammunition. Everything goes like a well-oiled machine. The whole system resembles a huge clock, where not a single little wheel may stand still.

Why this success? The German strategy has been excellent, but so has that of Russia, and France; especially that of Russia in her retreats of last year. The German is a good fighter, but the English, French, and Russian soldier is just as good a soldier. The tactics of one are just as good as those of the other. In other words, as regards fighting, you can take your choice. There must be something more behind it all than mere fighting ability.

But, you say, Germany was prepared. Of course she was, that is why I have written these essays, *to show what she did to prepare and how she did it, as well as what was behind it all, in an earnest desire to point out lessons that we should learn.* Furthermore,

England, France, and Russia knew all the time, or should have known, that Germany was preparing, as will be seen from the statement made by Col. F. N. Maude, C. B., late R. E., in his introduction to the books "On War" by von Clauswitz:

Yet there are politicians in England so grossly ignorant of the German reading of the Napoleonic lessons, that they expect that nation to sacrifice the enormous advantage they have prepared by a whole century of self-sacrifice and practical patriotism by an appeal to a Court of Arbitration, and the further delays which must arise by going through the mediæval formalities of recalling ambassadors and exchanging ultimatums.

The editors of the books referred to said:

The analogy has become much closer since Clauswitz' time. Now that the first business of the state is regarded as the development of facilities for trade, war between great nations is only a matter of time. No Hague Conference can avert it.

A study of "Modern Germany," by J. Ellis Barker, shows that he not only foresaw but foretold the present war, and warned both British and German statesmen of the coming conflict. We all remember how Lord Roberts

was criticized for his views regarding compulsory service.

Again, E. Alexander Powell, writing on "The Terror on Europe's Threshold," in *Everybody's Magazine*, November, 1909, five years before the war started, said:

To-day all Europe is divided into two armed camps, waiting breathlessly for the morrow with its Armageddon. At the head of one party, the more warlike and aggressive of the two, stands the German Michael, and ranged beside him is Austria-Hungary, and, perhaps, the regenerated Turkey, in spite of English loans and French sympathy. England is the leader of the other party, and behind her, though with no particular enthusiasm, march disrupted France and bankrupt Russia, with Portugal and Spain thrown in to make good measure. Italy, by virtue of the Triple Alliance, is theoretically an ally of Germany and Austria, but as a matter of fact she is in deadly fear of that fleet which Austria is building with such frantic haste in her Adriatic shipyards. So I rather think that when it comes to forming in battle array, Italy will go over to England.

Surely, considering everything, Germany is performing the seemingly impossible, and warrants the *Kölnische Zeitung* in saying:

With amazement will the neutrals observe once more the calm strength and organization of Ger-

many, which on one front is sustaining without swerve a gigantic offensive and conducts on another front an offensive of the largest scale; keeps in hand and administers in a model manner territories as large as some of the European states in the East; and in the West protects its commerce and furthers new enterprises of the greatest importance, delivers successful blows at sea and from the air, and succeeds at the same time in bringing about, out of her own accumulated strength, the greatest domestic loan in the history of finance.

The answer is *efficiency*. Condemn the German all you please, but if you consider what he has accomplished you will be forced to praise his efficiency, and if this war does nothing else but give the world a true conception of the theory and practice of efficiency, it will have served a real purpose and will in a measure compensate for the enormous losses in life and the waste of property.

## CHAPTER IV

### PRINCIPLES OF GERMAN MILITARY EFFICIENCY

Following out the principles of Clauswitz, victory can only be insured by the creation in peace of an organization which will bring every available man, horse, and gun, in the shortest possible time and with the utmost possible momentum, upon the decisive field of action.—COL. F. N. MAUDE.

**M**ADAME LAFONTAINE, wife of the Belgian senator who won the Nobel peace prize last year, took me to task, after an address before the Lake Placid meeting of the Efficiency Society, because I advocated our using industrially the principles behind the German warfare. My rejoinder was that I was not advocating the German method of applying these principles, but that I felt we could apply them differently to worthy ends, without in the slightest destroying their efficacy as principles. This same argument I used more recently when criticized by a close friend over what he termed “my ambition to Germanize American industry.” The prin-

ciple is one thing—the manner of applying distinctly another.

To avoid being misunderstood, here is my point: As a machine, the German war machine as well as the German industrial machine is remarkably efficient. In the building of these machines all the principles of true efficiency were considered, as will be shown later. I am not urging that we build our military and industrial machine after the German plans and specifications back of which are the rightly condemned Prussian militarism and the almost entire subordination of the individual to the state. I do urge, however, that we take the German model, determine the governing elements and principles of design, and so rearrange and readjust them as to give us a machine which, while patterned after the German unit, will conform to our different ideals and civilization. Theodore Roosevelt, although he has bitterly criticized much that the Germans have done, recently said:

Germany has out-distanced us in her industrial efficiency and now it is for us to show that a democratic government which guarantees personal liberty is not inconsistent with such industrial efficiency.

The question, therefore, for all of us to consider is whether or not we are going to

consider or ignore the lessons which the Germans can teach us, which if studied and applied will make us the most efficient industrial nation on earth.

That the Germans believed warfare could be made scientific is indicated by von Bernhardi in his book, "How Germany Makes War," as follows:

One might almost come to think that success in war will be more or less a matter of chance, which can in no way be influenced by foresight.

I think it is not so, after all. If we closely examine the possible effect of all the new phenomena which in a future war must assert themselves, and then test them in their relation to the general laws of warfare, we must succeed in getting a general idea of the nature of modern war, and in ascertaining a method by which we can act most suitably.

This is the way he (Moltke) has shown us. We are not to rest satisfied with what he has thought and done, but to go on unfettered, turning to account fresh developments. We must examine the conditions under which a future war must be conducted without blindly believing in authorities and, from what Moltke and the German wars of unification taught us, to develop new ideas and principles according to modern requirements.

Let us, therefore, determine, if we can, what these principles are which have enabled

two nations successfully to hold off seven nations on three fronts while keeping all fighting in the enemies' country, and how they can be applied to industry.

Close study reveals six principles which enter into the conduct of war and which the Germans have put into efficient practice. These will be considered, not in logical order, proceeding from one to six, but the reverse, as this will more clearly bring out the essentials I have in mind.

Nations engage in or prepare for war because they believe something will be gained by doing so. It may be for protection and freedom from the aggression of a hostile neighbor. It may be for purposes of defense, or to right a real or fancied wrong. It may be for territorial conquest or commercial supremacy. Regardless of the point of view, war does have its rewards, as every one familiar with our Civil War and the Revolutionary War well knows. There must certainly be some incentive warranting a nation plunging into a thing as terrible as a modern war. If not, why go to war? We can, then, consider the sixth principle as one of *Rewards*.

The German thought with reference to this principle can be best appreciated by quoting from von Bernhardi:

Germany supports 65,000,000 inhabitants on an area about equal to the size of France, while only 40,000,000 live in France. Germany's enormous population increases annually by about 1,000,000. There is no question, agriculture and industry of the home country cannot give permanently sufficient employment to such a steadily increasing mass of human beings. We, therefore, need to enlarge our colonial possessions so as to afford a home and work to our surplus population, unless we wish to run the risk of seeing again the strength and productive power of our rivals increased by German emigration as in former days. With every move of our foreign policy to-day we have to face a European war against superior numbers. This sort of thing is becoming intolerable. Such a state of affairs is highly dangerous, not only for the peace of Europe, which, after all, is only a secondary matter for us, but above all, is most dangerous to ourselves.

Whether the rewards the Germans had in mind, as expressed by von Bernhardi, were lofty ones, or whether they were unworthy a civilized people, is not a question for discussion here. *Rewards*, as a definite and important principle, is the consideration with which we are concerned.

The next question is: How did the Germans go about the work of winning these rewards? They knew that to win the rewards

of a war, men would have to know how to fight to best advantage—how best to endure the hardships of war. The cavalry, infantry, and artillery forces would have to know what to do at all times. Rapid mobilization would be an important factor, as well as long and fast marches. Borrowing a modern term, we have as their fifth essential, *Standardization*, or the proper way of actually doing things.

That this principle received an unusual amount of consideration is evidenced by the writings of such military men as von Bernhardi and von Clauswitz—the one a recent writer, the other an earlier one (1830). Note the surprising parallel between war and business in the reading of the following extracts from von Clauswitz:

As contemplation of war continually increased and its history every day assumed more of a critical character, the urgent want appeared of the support of fixed maxims and rules, in order that in the controversies naturally arising about military events, the war of opinions might be brought to some one point. . . .

Commanders and troops must be past masters in the art of operations, if simple movements are really to run smoothly. Simplicity of action which confers superiority over the adversary is derived from

complete familiarity with the means of warfare alone.

The reasoning of the Germans with reference to the fourth essential is entirely logical. To win the rewards they had in mind would need perfect operations, which in turn meant that master minds would have to pull the strings and coordinate the thousand and one details; would have to know at all times what to do and when. Orders to troops, movement of armies and equipment, arrangements for feeding the men, supplying ammunition, taking care of the killed and wounded, handling provisions, would all have to be a matter of clock-like precision, the principle being that the men at the front were there to fight, and not to cook meals, bury the dead, or wait for equipment and ammunition. This sounds familiar and is nothing but *Planning*.

But the task is to solve the riddle *in advance*. That kind of mental labor must bear rich fruit. It will best prepare victory. It must be done.—*Bernhardi*.

The way in which General Clauswitz judged of things, drew conclusions from movements and marches, calculated the times of the marches and the points where decisions would take place, was extremely interesting.—*Brandt*.

At such a place the Commander-in-Chief can dispose over all the necessary rooms maps and all the means for issuing orders. Here will also converge all the means of communication—chiefly, therefore, telegraph lines—for keeping General Headquarters constantly informed of all that is happening, and of the course of operations, and for transmitting its orders.—*Bernhardi*.

In order to plan, standardize, and win the rewards of war, what else was needed? Information of all kinds. The Germans, for instance, scientifically select those who are sent into the field. A manufacturer or banker of the right age would be left at home if he could do constructive work for the Empire, while those who could be spared would be sent to the front. This required a careful indexing of every available fighting man with reference to occupation and possible service to the country in case of war. The manufacture of field equipment, guns, ammunition, clothing, and the like were all based on the best and most reliable kind of information. The remarkable spy system of the Germans furnished much of its pertinent data. This all means *Records*, which constitutes our third principle.

By the word "information," we denote all the knowledge which we have of the enemy and his

country, therefore, it is, in fact, the foundation of all our ideas and actions.—*Clauswitz*.

The Germans wisely saw that to know what records to collect and then collect them, to plan properly with as little error as possible, to conduct efficient operations, and to win the rewards they had in mind, would require a personnel of such power as would enable them properly to consider what they decided upon as essential factors. They built what is commonly known as the “German War Machine,” a marvelous organization of the best brains they could find, which could take warfare and make a science out of it, as well as carry out the principles determined upon. *Organization* was, therefore, their second essential. On this, says von Clauswitz:

The contest of war is not a contest of individual against individual, but an organized whole, consisting of manifold parts. . . .

If we think of the manifold parts of a great armed force, of the number of circumstances which come into activity when it is employed, then it is clear that the combat of such a force must also require a manifold organization, a subordinating of parts and formations. . . .

We must rather exert ourselves to prepare for

war in a distinct direction, and to gain superiority, not in every branch, but in the one which we have recognized as decisive, whilst taking a correct view of all other important branches.

What governed the building of this organization? What records would have to be compiled? What would be planned? How would standardization be carried out and why? What would insure the rewards? Consider the German war machine confronted with the task of applying the principles mentioned and you would immediately ask such questions as these: What nation would we have to fight? With powerful nations all around us, how many nations would we have to fight at any one time? (It seems the Germans considered fighting the whole world and planned accordingly, which at least shows that they left little unconsidered.) What is the nature of the countries we might be forced to war against? What are the financial and fighting resources of these countries? Where would the greatest strength of the enemy lie, in its army or its navy? What are the various nations bringing out in the way of war implements? What is the condition of the enemy as to fortifications? What are our resources in men, equipment, facilities, and finances? Through what kind of

countries would our armies be forced to march?

Thousands of questions along the same lines you would consider as governing the things you would do, which means, *Investigation*.

Investigation and observation, philosophy and experiences, must neither despise nor exclude one another.—*Clauswitz*.

He, alone, who has well thought out the art can practice it.—*Bernhardi*.

Opposed to these efforts are the most powerful states in Europe. France wants to take revenge for 1870-71 and regain the old political hegemony. Russia has a lively interest in not allowing our strength to increase any further, so that she may pursue her political plans in the Near and Far East undisturbed by Germany. Russia may also, perhaps, dream of a future supremacy in the Baltic. If at the present moment—weakened by recent events in the Far East—she seems to pursue pacific tendencies, she is sure to return to her policy of aggression sooner or later, and finally, England is particularly hostile toward us, in addition to France.—*Bernhardi*.

Here is the list in logical order which the Germans considered in making war a science.

First, *Investigation*: Finding out what to do.

Second, *Organization*: Building the machine that will properly carry out what should be done.

Third, *Records*: Gathering facts and statistics to be used by this organization in arriving at the right kind of conclusions in carrying out what should be done.

Fourth, *Planning*: Logically arranging and coordinating all details so that the various steps can be rapidly and efficiently carried out.

Fifth, *Standardization*: Carrying out the steps determined or actually doing the work in a proper manner.

Sixth, *Incentives*: The results of the successful application of the other five.

In other words, the Germans realized that to win the rewards of war, the actual work would have to be done properly by well trained men, after the most careful kind of planning, based on and as indicated by records secured through an efficient organization, which thoroughly investigated every possible feature in connection with the task ahead of it.

How does Germany apply these principles? Through a general war staff, which is the thinking brain of the German army and is

divided into two parts, the staff with the troops having von Falkenhayn in charge, and the staff at Berlin with von Moltke in charge. Under the German plan, politicians and administrators are excluded from the sphere of military operations, for upon mobilization the government takes second place, the General Staff controlling and carrying out the war. The Chief of Staff is in no way responsible to the Chancellor, but only to the Emperor and to him alone. From this it can be seen that politics cannot enter into the conduct of the war. The staff, made up of the best brains in the army, is in the best possible position to carry on the war most efficiently and without the interference of laymen full of theories. Contrast the handling of the war by the British Cabinet with the way Germany has worked through her General Staff.

Are they sound, these principles which we have outlined?

Clement Kinloch-Cooke in *Nineteenth Century and After*, said:

Organization in any undertaking, in any contest, in any campaign, is an essential precedent to success. To disregard it is to court failure, to invite disaster. That being so, it follows logically and conclusively that if we are to win the war in a reason-

able time, and without undue and unnecessary expenditure of life and money, the entire community must be organized.

Sydney Brooks, in *Atlantic Monthly*, made the following statement:

Great Britain can find room for, and in almost all departments of life stands to benefit by, those qualities of patient foresight, scientific exactitude, thoroughness in preparation, thrift, realism, and devotion to the State of which Germany has set so far shining an example. For these are virtues that already exist in the British character but are largely lost to the national service through faulty organization.

A few examples of the practical applications of these principles will prove interesting to the student of preparedness.

Let us take *Investigation*. William L. Saunders, in an article, "Waking up American Industries for Defense," in the *New York Times Magazine*, said:

Not long ago a learned doctor, who is a most reliable authority because it was his fortune to take part in the experiences he relates, told me that the very threatening Moroccan question of a few years ago was really smoothed out and settled by a Ger-

man chemist. The world has said it was lack of this and lack of that, and because of this and because of that, but the real reason why Germany did not strike at the time was because the chemist said "No."

This chemist pointed out that the supply of explosives on hand in Germany would last just so long. Then Chile's nitrate would be needed. Great Britain's superior navy would probably prevent Germany getting what she needed from that South American source. And if Germany did not gain a quick war finish she would be helpless through lack of ammunition.

"Wait a while," said this chemist. "Establish a plant on the Rhine so that you can get your nitrates direct from the air. It can be done. Then we can defy the world." And such a plant was later established. The world knows the result—so far as the munitions end of the struggle is concerned.

With reference to *Organization*, the following by Garet Garrett, special correspondent for the *New York Times*, will prove interesting:

At the end of September, 1914, the second month of the war, the supply of German ammunition was almost exhausted. There was a panic about it, especially as the crisis in ammunition coincided with a crisis in military strategy, the invading armies having been beaten back in France, with Hindenburg

reporting at the same time that he required a great many more men and tremendous quantities of shells to hold the Russians back on the eastern front. Germany was then in a very tight place. Certain amazing events on the western front, as, for example, bayonet charges by soldiers imperfectly or not at all supported by artillery, are only now to be understood in the light of facts unknown at the time.

To meet these unexpected conditions heroic measures were necessary. The government promptly laid its hands upon all industrial establishments and processes that were adaptable to the purpose, upon all raw material existing in manufacturers' and dealers' hands, and upon all the doctors and the scientists whose specialized talents fitted them to help solve the problems in hand. The man best equipped by experience and qualities of mind to become economic dictator was put at the top of it all. Industries were classified. Inventories were taken of their stock. Then, to a fabricator of cloth, or metal manufacturer, the dictator would say, "Your factory and your stock of raw material are now absolutely in the hands of the state. You are to work exclusively for the state. In order that the transition may not be too violent, you may have ten per cent. of your own raw material for private use during January, and five per cent. during February; after that you are to fill only war orders for the state."

At the same time the great German banks formed for each of the principal industries a war company

to receive orders from the state, place contracts with the manufacturers, buy and sell raw materials, and, in general, to finance the whole vast business at a regulated rate of profit. So you would find a foreign exchange expert from the Deutsche Bank at the head of a war company dealing in wool cloth, and a peace time specialist in American securities, whom you had once known in Wall Street, conducting large and difficult operations connected with the production of shrapnel, or perhaps absorbed in the task of erecting factories to recover cotton fibre from cotton fabrics.

In this way the industries of Germany were commandeered until eighty per cent. of them came to be employed directly or indirectly in the service of war.

Take *Planning*. The following news dispatch is the most eloquent exposition of co-ordination and staff control I have ever seen:

Dunkirk, Oct. 28 (by mail).—A man in pajamas (at least he wears them most of the time, being too busy to dress) is running the thousand and one details of the French army. Gen. Joffre is at the head and he handles the big questions, presses the buttons, so to speak, but Gen. Bertholet, Chief of Staff, does the actual work.

After several trips along the fringe of the war, after meeting thousands of soldiers on the same day,

some going north, some going south, in what appeared to be a hopeless tangle, it struck me more forcibly than ever that the modern fighting machine is the most complicated thing on earth.

I tried to imagine myself commanding all this, to grasp how a 200-mile line of this sort could be controlled and how it could possibly be kept from getting tangled up with itself and without interference by an enemy. My curiosity grew, until I decided to find out how all this business is managed by one man.

In Gen. Joffre's headquarters, in a certain long room, hangs a special map, the scale of which is 1-1000. It shows every road, canal, railway, bridle path, pig trail, bridge, clump of trees, hill, mountain, valley, river, creek, rill, and swamp. This is part of the outfit. Another part is a wonderful collection of wax-headed pins of all colors and sizes. These represent army units of all sizes and all organizations. Into the long room run many wires, both telephone and telegraph. Wireless apparatus is also in this room. The way it works seems wonderfully simple when it is explained.

The battle is about to commence. The troops have been distributed all along the 200-mile line. The Germans are facing them. A bell rings: "Hello! Yes! The Germans are attacking Gen. Durand's division? They are in superior numbers? The General needs reinforcements? All right."

The staff officer who has taken this information

over the phone hurries to where Gen. Bertholet is sleeping. The General has just dozed off. This is the first sleep he has had in thirty-six hours, but Gen. Bertholet is wide awake in an instant. He jumps to the floor, still wearing his pajamas, the only garment he has worn in several days. The staff officer reports.

In a twinkle, Gen. Bertholet, who knows his map as he does his own face, locates Durand's division. He knows that ten miles back of Durand's command are quartered a number of reserves, under Gen. Blanc, according to the pins. Bertholet also learns from the pins that a number of autobuses are near Blanc's soldiers.

"Order Gen. Blanc," he commands, "to reenforce Durand at once with 10,000 men, four batteries of 75-millimetre artillery, ten machine guns and three squadrons of cavalry. Tell Blanc to transport his troops in autobuses."

Within two minutes, Gen. Blanc has received the order. Within five more he is executing it, and Gen. Durand is informed that help is coming to him.

Then Gen. Bertholet takes another nap, if the battle permit. If it does not, he stays awake to direct men who are miles away from him.

Every time a bridge is blown up or a pontoon has been thrown across a stream or a food convoy shifts, Gen. Bertholet gets up and shifts his pins to indicate the change. Nothing happens along the 200-mile battle line but that Gen. Bertholet, still in

pajamas, leaps from his bed and changes the pins on the map. The map must be kept up to the minute. Gen. Joffre must be able to look at it any time of the day or night.

As far as possible, through information brought in by spies or aviators, the forces of the enemy are kept track of in the same manner. No detail that is of use is overlooked. The pins indicate even the size of the guns, the kind of ammunition they use, and so on *ad infinitum*.

With reference to *Standardization*, the following extracts from an article "German Inventiveness in War Time" by Heinrich Goehring, in *Ueber Land und Meer*, will illustrate what is meant:

The tremendous war of the present has proved a mighty stimulus to the inventive spirit of Germany. The old saying that necessity is the mother of invention has found the most practical application in the Fatherland.

Of particular value is an entire series of discoveries in the domain of coal consumption, especially anthracite, which Germany possesses in such quantities. In former days the various gases coming from the coke ovens have been permitted to escape through chimneys. But now, not only is the vicinity of these establishments of a much purer atmosphere than before, but the by-products from coal, including tar

oil, anilin, naphtalin, etc., are of the utmost usefulness.

The utilization of coal tars for dyestuff manufacture has for some time helped to make Germany's position in the world of chemistry unique.

In the matter of nutritive articles a recent addition of the utmost value is a feed for horses which consists of sugar, animal blood, and a coal tar derivative.

An interesting medical discovery has been made by Dr. F. Hammer, who in the *Munich Medical Weekly* explains that by subjecting sawdust to a roasting process he has obtained an excellent anti-septic for healing wounds. The extraordinary demand for benzine in the army caused laboratory investigators to expend their energies in finding suitable substitutes.

When it comes to replacing metals formerly considered indispensable for specific purposes, our inventors have been particularly happy in their substitutes. . . . Iron and steel, so plentiful in Germany, are now widely used where formerly copper alloys were considered necessary. This discovery is expected to prove of far-reaching benefit even when peace prevails.

The substitution of paper for rubber has been one of the chief achievements of our investigators. . . . Fireproof wood is another invention that has proved its worth during this abnormal war period. . . . In substitutes for foodstuffs our chemists have

perhaps shown their greatest solicitude and ingenuity. . . . Wheat, rye, and potato flour are now being used in the textile industries where before grease was necessary. . . . Talcum has become one of the most useful of all the soft minerals. . . .

In the manufacture of optical instruments a wonderful advance is noted.

Concerning *Rewards*, read the following by Professor Potter, of Harvard University, in a lecture before the Forsythe Dental Infirmary:

The teeth of the English soldiers in the trenches are in poorer condition than the men of any other power. The French rank much higher as regards mouth hygiene efficiency, with the Germans heading the list, almost 100 per cent. perfect.

The German soldier, perhaps, through the foresighted and long preparing German nation, is faring the best of any, especially as regards his teeth. For more than fifteen years Germany has been caring for the teeth of its subjects, establishing clinics in the public schools, dental infirmaries in the smaller towns and villages as well as in the cities, and, on the whole, making sure that no child, especially a boy, is allowed to let his teeth get into that state of decay which would necessarily cause his rejection at the time of a call to his colors.

Yes, but, you say, Germany was preparing for this war since the conclusion of the Franco-Prussian war. Not according to J. Ellis Barker, who said in an article, "The Secret of Germany's Strength" in *Nineteenth Century and After*:

Not forty years but for two hundred sixty years, since Frederick William, the Great Elector, came to the Prussian throne, the slow-going plants of German efficiency and thoroughness have steadily unfolded, in the administrative, military, financial, and economic policy that make modern Germany.

But what has all this got to do with business—with industry? Bernhardi says:

To strive always for the highest possible success, with the utmost energy, is the first principle of all warfare.

Couldn't this be hung up in the office of every executive by substituting the word "business" for "warfare"? And von Clausewitz said:

If we have clearly understood the results of our reflections, then the activities belonging to war divide themselves into two principal classes, into such as are "preparations for war" and into the "war itself."

Isn't this the familiar planning and performance so emphatically advanced by those advocates of scientific industrial management, Frederick W. Taylor, H. L. Gantt, and Harrington Emerson?

Von Clauswitz also said:

If we desire to defeat the enemy, we must proportion our efforts to his powers of resistance.

Every sales manager in the country could take this as his motto.

Von Hindenburg himself frankly admits that the strategy and tactics which have made him by far the greatest single figure in this world war, did not originate in his brain. To a great extent his maxims of war are those of Frederick the Great, who in turn adapted them from those of the great Chinese warrior Loutao, who as early as 1150 B. C. said:

The strength of an army depends less on numbers than upon efficiency.

This we can change to read:

The strength of an industrial plant depends less upon numbers or money spent than upon efficiency.

The great question now confronting us is: What is behind military efficiency in general

and the German military efficiency in particular? To indicate what the lack of efficiency leads to, let us use Great Britain as an example, and, to avoid being unduly criticized for taking the British to task, let me submit the following from an editorial in the *Daily Mail*, on a speech by David Lloyd-George on munitions and the labor situation:

This speech contains the gravest indictment yet drawn against the Government. "Too late" is written in letters of fire upon the Government record. Too late in aiding Belgium; too late to save Serbia; too late in the Dardanelles; too late with munitions —these words have dogged the allies' every step.

This is to show what industrial efficiency is not; painted not with a desire to criticize England, for she is nobly fighting against enormous odds, with her bull-dog tenacity, but to show more clearly the definite and inseparable relation between military and industrial efficiency. I know I am treading on dangerous ground; in fact, my close friends have told me that I will incur the ill will of all pro-allies by my frank discussion of the German war machine. If, however, I can, by laying particular emphasis on the bad spots, open the eyes of some to the need of industrial preparedness, I am willing and can well

afford to stand any amount of personal criticism.

Does American industry need reorganization? Yes, if we are to be the most efficient industrial nation on earth. By all means, if our efforts toward "preparedness" in a military and a naval sense are going to amount to anything.

As a writer in *Pearson's Magazine* said:

What is meant by "hit-and-miss" in industry? We who live in this country should know. We are passionately devoted to it. We suffer from it, but we would apparently die for it. Many die from it. It is the system that permits the business of the production of the necessities of life to gravitate into the hands of individuals, each of whom is permitted to go his own pleasant way. Not even our Government may tell any individual what he shall produce or how much he shall produce. We have a theory that the "law of supply and demand" regulates all such matters much better than we could regulate them. England has the same idea. England would be all right to-day if the idea prevailed in Germany. The British steel wall would have long since done its work. But Germany has a different idea. She had it even before the war. She believed in orderly industry.

I am not prepared to say how far we can go in this country along the same lines, but

I do know that there can be no order in industry until we get away from the "each for himself" attitude and adopt a slogan something like that of the Germans, "One for all and all for one."

We are free people; we have wonderful resources in money, men, and materials; we believe "in union there is strength;" we are an unusually prosperous nation; we are now contemplating "preparedness." Will our people, believing as they do in unity, take these resources and through the proper application of the six principles named, *prepare industrially* as well as in a military sense to lead the world, or will it take a great war to shake us free from individualism and force us, as it is forcing England, to learn the great lesson that the power behind the most efficient civilization is *organization?*



## CHAPTER V

### GERMAN INDUSTRIAL EFFICIENCY

The industrial supremacy of Germany is the effect of a definite and deliberate political action. Thrift was multiplied by capital and education by industrial efficiency.  
—W. H. DOOLEY, in *Atlantic Monthly*.

ROGER W. BABSON believes that the great victories have always depended upon the net producing powers of nations, rather than upon their armies and navies. Theodore Roosevelt, in his address before the National Conference on Immigration and Americanization in Philadelphia, stated that Germany has outdistanced us industrially, and that she controls and encourages industry better than we do.

If you will pair the two expressions, the logical question is: What is the industrial system of Germany which has yielded so great a net producing power as to give it maximum efficiency in warfare against such enormous odds?

A study of this kind is certainly worth

while to us, a nation, standing on the threshold of greater and better things. Let us, therefore, begin with the statement of the Hollander previously quoted, who said:

Here lies Germany's strength. Not in its howitzers, not in its submarines, not in new chemical discoveries, not in the organization of production and distribution. All these are but manifestations; only instruments of use because of the tremendous force back of them—the marvelous energetic power of the soul of the German people!

What is the soul of a people? The religion, the thought, the outward expression of an inner conviction, the thing for which a people will fight and die. What gives a people a soul? Wisdom, unselfishness, thoughtfulness, good government, cooperation, protection, the "give and you will get" attitude.

Everything starts off as a problem of some sort, whether it is conducting a war, governing a people, or running a business. Let us put the thing in the form of a hypothetical question.

Given a rapidly growing nation, governed by an aristocracy more or less feudal in character, whose people possess little aptitude for politics, living under anti-socialistic laws, devoting its attention to agricultural

pursuits and possessing inferior natural resources: How can it overcome these handicaps and become a leading nation among nations?

This question expresses the problem confronting the Germany of fifty years ago. As J. Ellis Barker says, in his book "Modern Germany":

Germany's geographical position and physical configuration and structure, her climate, her agricultural soil and her mineral wealth are greatly inferior to those possessed by Great Britain. Germany is naturally a poor country and her natural poverty has been accentuated by numerous wars and invasions which have frequently devastated her territories. Until lately she had but little accumulated wealth, and she was almost exclusively an agricultural country. She has only inferior coal. She does not possess any colonies worthy of the name, and until a few years ago she had hardly any experience in manufacturing, commerce, shipping, and finance.

Yet despite these drawbacks, Germany has made wonderful progress in state socialism, she has an efficient railway system, she has developed marvelous ability in the administration of states and cities, and has become since 1870 the wealthiest nation in Europe and one of the greatest industrial nations on earth.

Frederic C. Howe, Commissioner of Immigration in New York, and "an American of the Americans," says in his recent book "Socialized Germany":

It was on such unpromising foundation that the German empire has been reared. Yet despite these limitations, the progress of the last generation is without a parallel in the history of the world. There is nothing in ancient or modern times to compare with it. So rapid has been the development that the estimated wealth of Great Britain in 1907 was 300,000,000,000 marks, while that of Germany was 350,000,000,000 marks, and this wealth creation has come about in the short space of a generation, and for the most part during the reign of the present Emperor.

This is the vital point: Is this progress due to certain characteristics of the Germans, not possessed by other races, or to wise leadership, or to both?

J. Ellis Barker in an article, "The Secret of Germany's Strength," said:

The German people are often praised for their thoroughness, industry, frugality, and thrift. These qualities are not natural to them. They received them from their rulers and especially from Frederick William the First. He was an example to his peo-

ple, and his son carried on the paternal tradition. Both kings acted not only with thoroughness, industry, frugality, and economy, but they enforced these qualities upon their subjects. Both punished idlers of every rank of society, and even of the most exalted.

It is also well to bear in mind that to a great extent the Germans are adaptors and not originators, imitators and not initiators. None of the following list of inventions and their inventors is German, but several of them owe their present status to German research:

Steam engine .....	James Watt
Screw propeller .....	John Ericsson
Telegraph .....	Samuel F. B. Morse
Automatic machine gun.....	Hiram Maxim
Telephone .....	Alexander Graham Bell
Submarine .....	John P. Holland
Wireless telegraph.....	Guglielmo Marconi
Aeroplane .....	Orville and Wilbur Wright

“If,” as Veblen says, in “Imperial Germany,” “the German is identical as regards endowments and racial tendencies with the Dutch, Belgians, and British, then we cannot get away from the conclusion that the Germans being no more brilliant or able, indi-

vidual for individual, than other races, and being adaptors rather than originators, were molded and formed into an efficient nation by wise rulers."

So far, so good. Germany had its problem, a staggering one, indeed. It had its rulers, wise if autocratic. It had its people, the kind you meet in every country. How did the rulers of Germany and the leaders working with them work the thing out?

From the time of Frederick the Great, who taught that Science and Art were the sources of a country's greatness, these have been promoted until to-day Germany is well termed "a land of experts." In Frederick's "Political Testament" we read: "The first duty of a citizen consists in serving his country;" which means *cooperation*.

In other words, national efficiency, depended upon industrial efficiency, and industrial efficiency depended upon the efficiency and the cooperation of the individual. Isn't that a lesson well worth taking to heart?

The reasoning of the German leaders with reference to industrial efficiency was just as sound and logical as that which governed the building of the German war machine.

1. They could not solve the problem by attempting to force duty and cooperation upon their subjects, unless there was something in

it for those whose efforts would bring about the thing so vitally needed—*Rewards*, their sixth principle.

2. With adequate rewards guaranteed to their subjects, the people would be willing to cooperate, to become trained and educated and to take up special lines of endeavor—*Standardization*, their fifth principle.

3. Trained subjects, whether in the sciences, in warfare, or in administration, seeking and securing rewards would also take more kindly to direction and coordination of efforts—*Planning*, their fourth principle.

4. To train and educate a people and properly coordinate their efforts would be obviously impossible without the right kind of facts and data on which to work—*Records*, their third principle.

5. Collection of records, coordination, and education would be impossible without the machinery with which to work it all out—*Organization*, their second principle.

6. No argument should be necessary to prove that analysis and study had to precede it all—*Investigation*, their first principle.

Therefore to work out the task expressed by the hypothetical question presented in the introductory paragraphs of this chapter, the procedure was:

1. *Investigation*: Ascertaining what had

to be done to bring about industrial efficiency.

2. *Organization*: Creating the machine to do the work.

3. *Records*: Reports on which the organization would base its conclusions.

4. *Planning*: Coordinating the efforts of those who would be necessary in the working out of the problem.

5. *Standardization*: Training and educating the people to do their part.

6. *Rewards*: The results to the rulers and to the people of the successful application of the other five.

In other words, as against the individualism and non-interference so dearly loved by the British (and are we so far behind?) the Germans wanted cohesion, unity of purpose and the acceptance of direction.

Now let us briefly sketch the underlying thought the German leaders had in mind in the development of their industrial system and the results they have attained through the use of the factors named. This thought can be best expressed by studying the following ideals:

1. Consider the reasons for political disturbances and in dealing with the people give them wise and economic administration under expert direction.

2. Abolish pauperism, keep workers employed, and provide for old age, sickness, and injuries.

3. Take part in industrial combinations that undertake to regulate prices and production in any industry.

4. Prepare growing generations for achievements in industry.

Is there anything about these that you, Mr. Workingman, or you, Mr. Manufacturer, could not subscribe to?

We need not here go into the application of each of the six principles named, but we can trace the industrial development of Germany through the use of organization and planning as applied to the industries themselves (the employers of labor) and to standardization and rewards as applied to the workers.

A study of Germany will reveal that from the standpoint of industry as a whole the important elements were:

1. Efficiency of transportation—as the outlet for products of industry.

2. Efficiency in the mines and forests—to give industry adequate supplies of coal, iron, and lumber.

3. Efficiency on the farm—to maintain the industrial workers.

4. Efficiency in banking—to finance industry properly.

Let us take up the question of transportation first, for undoubtedly the one thing before all else which has contributed to the industrial development of Germany is her railway system, which is, by the way, proving of enormous value to her in this war. The first steps towards state-owned railways, according to Howe, were taken in 1873, and to-day she has \$4,706,904,750 invested therein, on which there is a net profit annually of \$189,916,910. By 1905, the Prussian railroads had paid into the treasury as profits enough to pay off every cent of indebtedness, leaving the great system as a net asset to the state. Out of the revenues from railways the states receive the following incomes: Prussia, 46 per cent.; Saxony, 29 per cent.; Baden, 32 per cent.; Würtemberg, 22 per cent.

In *The Contemporary Review*, 1905, an English writer said:

German railroads have largely contributed to the prosperity of German industry; the British railways have largely contributed to the decay of British industry. In Germany trade policy is made by trade; in Great Britain it is made by the railroads, which, without consulting the trade, prescribes its course, stimulating it here and stifling it there.

In "Monarchical Socialism in Germany," Elmer Roberts says:

All the devices (rebates, special rates, etc.) so passionately hated here (United States) are applied there, but with this difference—that while in America these devices are suggested, even necessitated by the war of interests or the will of the individual manager, they are applied in Germany according to principles of equity, which take into account industry, trade, and agriculture as a national whole, granting exceptions, taking one sort of traffic as privileged, another as normal, upon calculations wide enough to include the interests of the whole people.

The success of the German railways is due to divorcing them from politics; the head of the railway system in Prussia being the minister of public works, a permanent salaried official appointed by the king. Just imagine, if you will, 31,000 miles of railway (1907) being managed smoothly without boards of directors, stockholders' meetings, capitalistic interference, and the like.

It was Bismarck's idea that railways are more for service of traffic than of finance, to help industry instead of having it a money-making affair. On the strength of this policy Germany's railways, according to Barker, have increased 70 per cent. since 1880, as against 29 per cent. increase of British railways, the British capital per mile being two and one-half times greater than that of

the German capital per mile. Furthermore, Roberts says, when Germany took hold of the railroads there were ninety different administrations and 1,357 different rate tables.

Waterway development went hand in hand with that of the railroads, as will be seen from the following:

INLAND WATERWAYS (BARKER)

1882	18,715 ships.....	1,658,266 tons
1907	26,235 ships.....	5,914,020 tons

MERCHANT MARINE (BARKER)

1881	.....	1,181,525 tons
1910	.....	2,859,307 tons

Let us compare railways and waterways:

GOODS CARRIED 1911 IN TONS (HOWE)

	Home	Foreign
Waterways .....	43,304,000	34,328,000
Railways .....	346,420,000	53,870,000

There was a 31 per cent. decrease in Mississippi River shipping in 1906 over 1889, while Rhine shipping passing Emmerich increased 400 per cent. *There were fewer goods shipped in American bottoms from the port of Boston in 1915 than in 1810.* Do you get this, Mr. Manufacturer?

Now to take the next step—mines and forests. Howe reports that Germany controls the following:

	Capital Values	Net Profits Annually
Forests .....	\$730,898,200	\$29,235,928
Mines .....	128,907,725	5,116,309
	<hr/>	<hr/>
	\$859,805,925	\$34,352,237

Prussia alone controls 46 mines with a production of 21,463,934 tons, employing 97,267 workers (1911).

As regards forests, the United States Department of Agriculture said:

German forestry is remarkable in three ways—it has always led in scientific thoroughness and now it is working out results with an exactness almost equal to that of the laboratory; it has applied this scientific knowledge with the greatest technical success; and has solved the problem of securing through a long period of years an increasing forest product and increasing profit at the same time.

Regarding farms, Germany operates them to the extent of \$198,122,725 in capital values, earning yearly \$7,925,309. The telephone was also taken in charge by the government, in which there is invested \$694,816,650, earning yearly \$27,792,666. In other words, the German state and imperial governments operate approximately \$7,000,000,000 in properties earning yearly nearly \$300,000,000.

The agricultural attainments of Germany

have been brought about by cooperation of the German agriculturists aided by state and communities. Starting with about 3,000 co-operative bodies in 1890, there were about 22,000 bodies in 1908, according to Barker, which devoted their time to rural credits, co-operative buying and selling, dairies and milk. The chemical industries have also been of untold value to the agricultural development of Germany, in addition to the cooperation between agriculturists.

Regarding the relation of banking to industry, Thomas A. Edison said, in an interview reported by Edward Marshall appearing in the *New York Times* and copyrighted by the *Publishers' Press*:

One great advantage which the manufacturers of Germany have over us and over every other country is to be found in her great promoting banks.

For instance, the Deutscher Bank, which in the first place is one of the largest banks in the world, has a corps of engineers and auditors ready to investigate every phase of any proposed invention. If the invention which is taken to them proves, after the most careful investigation, likely to be useful and profitable, the money is forthcoming.

The bank then will watch the progress of the invention or the manufactory, will place its stock on the exchange, and, when it reaches a certain

point of prosperity, will take its money back, charging only a fair profit for its use, and leaving the inventor or manufacturer with his invention or his factory ready to go ahead with it alone.

This is an enormous encouragement to the inventive faculty of Germany, and I predict that it will soon put the German nation in advance of us in the origination and development of new mechanical ideas.

On the basis of organizing and planning applied to transportation, farm, mine, forest, and banking, what did Germany actually accomplish industrially? Since 1897, Barker says, German foreign trade has increased at the rate of \$113,000,000 each year. Consider the following:

INCREASES 1910 OVER 1880

Steel production .....	17.6 to 1
Iron and steel shipbuilding.....	22.0 to 1
Sugar industry .....	5.7 to 1
Soda .....	9.5 to 1
Sulphuric acid .....	12.5 to 1
Pig iron production.....	3.8 to 1
Potash .....	8.0 to 1
Coal .....	3.3 to 1
Horsepower of industrial engines.....	6.8 to 1

The chemical industry (Barker) is the youngest and most successful of the German industries, showing an increase from 1,700

chemists to 4,300 chemists in twenty-five years, and employing to-day 220,000 hands.

In connection with this, the following among the many substitutes resulting from German research, will prove interesting: Artificial musk, vanilline for vanilla, synthetic camphor, saccharine for sugar, synthetic turpentine, dyes from tar, synthetic indigo, synthetic rubber, fodder from straw and from beets. Barker shows the following comparisons of chemical developments:

	Soda	Sulphuric Acid
1878 .....	42,000 tons	112,000 tons
1907 .....	400,000 tons	1,402,400 tons

Another secret of German industrial success lies in the fostering by the state of right relations between worker and employer. W. H. Dooley in the *Atlantic Monthly* (May, 1911) said:

The German Government recognizes the duty and exercises the right of regulating industries in the interest of the employed; but in doing so, it is careful to keep in view the general industrial interests.

In an article "America—the World's Factory" in the October, 1914, issue of *Factory*, Hiram Percy Maxim said:

This formula can be pointed to, for it has already been found and tried and proven. It is a system developed by the Germans. Ten years ago they undertook to find a way to manufacture certain articles so good that the rest of the world would have to come to them for such goods.

Let us take a look at Germany. Here we have one of the biggest and most enterprising of all producers. The Germans have put their factories on such a plane that they have absorbed a tremendous volume of business which formerly went to other countries, and they have actually administered things so well that they have secured a monopoly in a great many special articles.

This has been due to *team work* of the highest order between the Government and their factory executives.

I know of one case where the best American product lasts four weeks and the same goods manufactured by German workmen last twelve and even sixteen weeks.

The vital question now is: Did these results come about by exploiting labor or by assisting labor? by driving labor or through the cooperation of labor? Let us analyze this phase of the subject, keeping the factors *Standardization* and *Rewards* in mind.

Standardization, which means training, the doing of things well, will be our first point of

attack. Doctor Falk, Prussian Minister of Education, 1872, stated:

Children must learn at school to perform duties, they are to be habituated to work, to take pleasure in their work so as to become efficient workers.

Behind this attitude you find a national policy that a son should be better than his father; and as a result the child is the subject of an expert study by parent, teacher, and doctor.

A manufacturer told me recently that not one-half of his workers knew why they did things, and spoke of hiring a German worker who asked, a few days after he started, "Now why do I do this to get that result?" Finding out the why of things comes from and through the right kind of industrial and vocational training.

Speaking of education in Germany, Howe says:

A large part of Germany's industrial achievement is traceable to the system of education, just as her international trade is traceable to the commercial colleges, in which thousands of men are trained for the conquest of the trade of the world. Education has had a profound influence on the development of the past generation. It has made Germany a land of experts.

In 1884, the control of the continuation schools in Prussia passed from the minister of education to the minister of trade and commerce, thus linking industry with education—a common-sense move. As a result you see in Berlin 89 per cent. of the workers from the ages of 14 to 18 going to continuation schools. Another point in connection with this is that the teachers at the German universities are not mere theorists, for, owing to the supervision of the state, practical men teach practical subjects. What efficiency in education has done for Germany can be seen by studying the following illiteracy figures (Howe): Russia, 61.7 per cent.; Italy, 30.6 per cent.; France, 14.0 per cent.; Great Britain, 13.5 per cent.; United States, 7.7 per cent.; Germany, 0.03 per cent.

The following, from "Monarchical Socialism," by Roberts, will prove interesting in connection:

The son of a day laborer, who, within the view of the national policy, should be more useful to himself and the commonwealth than his father, is the subject of careful expert observation. His teachers, the school physician, and the parents endeavor to determine the handicraft to which the boy is adapted.

The physician takes note of the body.

The teachers undertake to measure the mental capacities of the boy.

Painstaking effort is made to determine the boy's inclinations, so that the great misfortune may not happen to him of being deprived of the joy of work, of satisfaction in the thing done.

With reference to the industrial schools of Germany the United States Bureau of Labor said (1913) :

To sum up: the German industrial schools are achieving in large measure the purpose for which they were established—industrial efficiency. They are not fully developed, nor are their types finally fixed. They constitute a living, growing movement which gives every promise of increasingly fruitful results in industry and in the comfort and culture of the German people.

Dr. Robert Fletcher of Dartmouth says:

It is not her army of soldiers which other nations need to fear, but her armies of scientifically trained directors of industrial enterprises and of highly educated commercial agents.

With reference to the workers, let us see what *Rewards* have meant to them. J. Ellis Barker in "Modern Germany" says:

In Great Britain wages may be high on paper and food may be cheap on paper, but the evidence of great and widespread distress consequent upon unemployment or insufficient or precarious employment is to be seen everywhere. In Germany wages may be low on paper—food may be dear on paper, but the evidence of general prosperity is to be seen everywhere.

The savings bank statistics are a good index of a nation's prosperity, especially of the working class. Barker gives us the following:

Year	Germany	Great Britain
1900 .....	\$2,224,645,000	\$907,870,000
1907 .....	3,480,150,000	1,048,270,000
Increase .....	\$1,255,505,000	\$140,400,000

In addition to the above there was in Germany \$250,000,000 in reserve funds against no reserve in Great Britain. Add to the above the fact that German workers have \$500,000,000 in the Imperial Assurance Societies and \$1,000,000,000 in cooperative building associations and the showing becomes all the more remarkable, especially when it is considered that German families are larger than English families, children go to school for longer periods, and men are subjected to military service.

One ideal of the German rulers has been to make workers more skilled, and as a result the Ministry of Education in twenty years has reduced the ratio of unskilled to skilled from one-third to one-tenth by directing boys in learning trades and by providing specific instructions. The rulers also have that rare trait of establishing a point of contact. The Kaiser is a bookbinder, the Crown Prince is a turner, one of the other princes is a blacksmith, and still another a brass worker.

Truly remarkable showings, are they not? Yet these are only the results of certain distinct and well defined steps which as far as this section is concerned have to do with rewards. The doctrine behind industry in Germany was proclaimed by Bismarck as follows:

Give the workingman work as long as he is healthy, assure him care when he is sick, insure him maintenance when he is old. Was not the right to work openly proclaimed at the time of the publication of the common law? Is it not established in all our social arrangements that the man who comes before his fellow citizens and says, "I am healthy, I desire to work, but can find no work" is entitled to say also, "Give me work," and that the state is bound to give him work?

"But large public works would be necessary," ex-

claimed an opponent. "Of course," replied Bismarck, "let them be undertaken. Why not? It is the state's duty."

Speaking of the German workman, Prof. Bonn of Cornell says:

He must be defended against the risks of his calling and be made a contented workingman, able to educate his children, as workingmen, perhaps, but in comfort and decency.

That is the inner meaning of the German social legislation, of that insurance which has insured fifty million people against sickness, twenty-five million against accidents, sixteen million against old age.

In other words, the state takes care of the individual and, of course, the individual is willing to help the state when his services are needed.

Consider these statistics (Howe, "Socialized Germany") in showing what has been accomplished as a result of this policy:

Population of Germany.....			67,000,000
Families in Germany.....			13,000,000
	Sickness	Accident	Old Age
1908	Insurance	Insurance	Insurance
Persons .....	13,189,509	23,674,000	15,554,000
Contributions ..	\$91,491,000	\$51,887,000	\$71,470,500
Benefits .....	\$82,762,000	\$39,471,000	\$45,369,000

From 1885 to 1905 a total of \$1,276,836,000 has been paid out by these three funds, of which the working class paid less than one-half, the employers a larger share and the empire \$96,700,000. Doesn't all this serve to relieve the worker's mind of uncertainty and fear, making him a positive instead of a negative factor in industry?

So much for social insurance. What about employment? Note the following unemployment statistics of the three countries carefully:

Year	UNEMPLOYMENT		
	Germany (Barker)	England (Barker)	United States (Roberts)
1904 .....	2.1	6.4	12.1
1905 .....	1.6	5.3	8.5
1906 .....	1.1	3.7	6.8
1907 .....	1.5	3.9	13.6
1908 .....	3.1	8.7	28.1
1909 .....	2.8	7.7	14.9

Barker claims it is safe to assume that for every unemployed worker in Germany there were four in Great Britain. Why? The answer is the comprehensive program of labor exchanges, of which there are 300 in the Empire, reporting to the Imperial Statistician's office in Berlin (Records), filling 1,000,000 positions annually.

Howe says of the one in Berlin (which secures over 100,000 positions yearly) :

There were probably 600 men waiting for work while I was there. Here the men sit, grouped in sections, distributed according to their employment. When a call is received by mail or over the telephone, the men in the employment desired are called to the desk. The wages and conditions are explained, and if satisfactory the men are given a card to the employer.

Priority is given to the married men as well as to those first registered. On one side of the hall is a buffet, where beer, cigars, and food are sold at a trifling sum. There are cobblers and tailors who do jobs of mending. A shower bath can be obtained in the basement for a cent. There is a smaller room and canteen for the skilled workers, and another for women workers in another portion of the building. Connected with the registry is a free dispensary and medical inspection bureau. By these simple precautions the men are kept strong and presentable. They do not suggest the vagrant, and when they go to the employer they are not down and out in appearance as are the men who roam the streets and live as best they may in private lodging houses or saloons in America while looking for employment. The Exchange preserves the self-respect of the worker. There is no suggestion of charity about it and the general appearance of the men indicates that they

are for the most part free from the haunting fear of poverty so characteristic of the unemployed in this country.

Through the cooperation of the various Exchanges the actual condition of the various labor markets are known—the ebb and flow of labor requirements can be easily followed. The bricklayer looking for work knows in Germany where not to go. The workmen's lodging house is a help to the man looking for work, there being 462 in Germany in 1904, accommodating 2,000,000 annually.

Considering the matter of depressions and hard times, Howe says:

During the industrial depression of 1914-15 in America, unemployed men petitioned the councils in many cities to provide temporary relief. They did not want charity; they wanted work. The cities were powerless to relieve the situation or had no inclination to do so. Here again Germany is far in advance of other countries. She recognizes that the worker has a right to be protected from starvation and to expect something more than a visit from the charity organizations. "Distress work" is often provided to meet emergencies. Cities disclaim any legal or moral responsibility in the matter; they do not recognize the "right to work," but they provide work in considerable measure, nevertheless.

Howe also describes the operations of the German industrial courts which are provided to relieve the worker from the delay and high cost of litigation, being administered by the employers and workers. In 1908 there were 469 industrial courts which handled 112,281 cases; more than 83 per cent. of the cases being adjusted without trial. Speed is another feature. In this same year only 1.5 per cent. of the cases lasted over three months. Another surprising fact was that only 7 per cent. of the appealable cases were taken to a higher court. Of these courts he quotes a German writer who said:

By its friends the industrial court law is considered as the Magna Charta of the German workman. In this court the labor world of Germany has for the first time found an effective instrument for the prevention of wage reductions and the violation of the labor contract. There is no state institution to which workmen cling with more love or warmer admiration.

Sound indeed were these policies of the Germans and the pity of it is that we have not given them the consideration they are entitled to. Read this editorial in the *Boston Daily Advertiser*, on "Why Not Stop the Leaks?"



What causes crime? What causes feeble-mindedness? What makes for insanity? What breeds pauperism? There is no secret about it. For years patient investigators have studied these causes. They are known, tabulated, classified with the nicety of a mathematical problem.

Drink, unemployment, lack of educational or vocational training, sickness, starvation wages, truancy, lack of playgrounds—all these and other causes are certain. Bad living conditions, bad working conditions, bad housing conditions, all play their part. If a wage earner has nothing to live on, is despondent, and the saloon is ready to give him a relief from the moment's misery, he drinks, perhaps, and his children may go neglected. The man who is thrown out in his old age to starve must possibly be a burden on the taxpayers, in the almshouse, or as a petty pilferer, or what not. Only the mentally unsound become criminals through deliberate preference; and even the causes of mental unsoundness are usually to be traced to the community's own neglect of social welfare. So it all foots up to this, in essence: that we have kept conditions that of themselves breed the population for our jails, our reformatories, our asylums, our hospitals, all our public institutions.

What is the secret of the success of the wonderful industrial efficiency in Germany? Organization and planning as applied to the

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things which industry depends upon—railways, waterways, merchant marine, farms, forests, mines, and banks on the one hand; on the other, training of the worker through continuation schools and vocational education; insurance against sickness, accidents, and old age; assistance of the best kind in finding work and providing means for settling industrial disputes.

It is said that wages are not high in Germany. Perhaps not, but the fact remains that considerable has been done to supply things which, other than wages, make for the comfort, freedom from worry, maintenance of self-respect, and contentment of the worker. Wages are high in comparison in this country, but we can learn a lot from Germany in the application of *Rewards* to industrial workers as well as in the proper organization of industry.



## CHAPTER VI

### WHAT WE SHOULD ADAPT FROM GERMANY

Shall we of the United States, when our great opportunity comes, falter and fail, or shall we set a mark that it will take us a hundred years to attain?—HARRINGTON EMERSON.

I HAVE been accused of being a German propagandist; I have been criticised for what has been termed my “worship” of German efficiency; it has been said I advocate material efficiency too strongly; subscriptions to the magazine in which some of these chapters first appeared were cancelled owing to the so-called pro-German character of the discussion. I knew I was taking the wrong end, from the standpoint of popular opinion, of an intensely interesting subject at the psychological moment. I did it to make people think and discuss what I wrote about. I have succeeded in this, and as thinking is the next step to doing, I am not at all concerned regarding the ultimate outcome or the personal criticism.

Let me ask of the readers, especially my critics—What would have happened to Germany if its well organized war staff, having absolute control, had been forced to depend upon a disorganized and individualistic industrial system? *She would have been beaten before she even started.* Or what would have happened if France, England and Russia had been as efficient in industry as Germany? *Germany would have been a beaten nation in the first six months of the war.*

Industrial efficiency is, therefore, the basis of national and military efficiency. Can there be industrial efficiency unless there is individual efficiency and cooperation, loyalty and support?

Regarding material efficiency, some years ago I advanced this law of wage payment, which will show exactly where I stand:

Men at work will do their best and accomplish the most when engaged in work which stimulates, when rest balances exertion, when they can work efficiently rather than strenuously, when force and driving tactics give way to the leadership which attracts, when causes contributing to worry have been eliminated, when provision is made to cover the natural inertia due to habit, when they have faith in the intention of the management to deal fairly and honestly, when they are given an amount to cover the time employed

plus an additional amount which represents to the man the skill and cooperation displayed.

Read this by Senator Hitchcock (*Hearst's Magazine*). It will prove interesting:

It will not do to think of preparedness only in terms of ships, troops and munitions. Equal attention must be paid to the state of American patriotism and American manhood. *A sound plan of national defense must dig down to the very wellsprings of national life and build upon unity, love of country and virility.*

For more than a year the world has seen England call for fit men, and has watched a far-flung program of military preparedness shattered by strikes, refusals and sullen indifferences. Sacred promises of aid and protection have crumbled while officers sweated in training camps trying to make soldiers out of poverty-stunted weaklings. During the same period Germany has flooded the continent with singing millions capable of all endurance.

It is not a question that has to do with sympathy, but a cold-blooded comparison of two methods of preparedness. Germany has done the thing which England has not been able to do, *because Germany, more than any other nation, has made the welfare of the individual citizen the concern of the state, manifesting protective and continuous interest in his life, wealth, education and future.* Government

in Germany is not a sovereign power—detached, aloof and magisterial—but a working partnership with the people for the promotion of prosperity.

That's it—*the government, a working partnership with the people for the promotion of prosperity.*

What, then, can we learn from Germany in effecting this partnership?

My study reveals the following:

1. Organization of a superior order;
2. Control of the most efficient kind;
3. Cohesion and unity of purpose;
4. Cooperation which really cooperates;
5. The staff idea as applied to military and naval affairs;
6. Intelligent direction through expert guidance in all important matters;
7. Elimination of politics from things influencing the welfare of the people;
8. Foresight and planning ahead;
9. Proper and adequate industrial education;
10. Social insurance covering accidents, sickness and old age;
11. Freedom from costly industrial disputes;
12. Adequate employment;
13. A reasonable distribution of wealth;

14. Proper direction and encouragement of big business;

15. Governmental control of the important factors which serve industry and the people.

Look them over carefully. *Is there a single one of them that we could not use in this country to advantage and to the profit and welfare of our people?*

How are we going to adapt them to our needs? It is obvious by this time, that we must have a greater social, industrial, military and naval efficiency. We need *Organization*, the smooth working machinery with which to do things, and *Control*, the methods used by this machinery in getting things done properly, if any country on earth does. Blind indeed is the man who cannot see it. As Howe well says: "These ideas will only be ignored by those who will not see and it will be unfortunate for the nation which refuses to see."

But this situation confronts us: Can we get the support, the loyalty and the hearty cooperation from that proportion of our people on whom industrial and military efficiency depends, until we have in some manner made it worth their while? Have we made it worth their while? If any one thinks we have, let him go back and review the twenty conditions

set forth in the first chapter, the very best possible answer to the question.

This conclusion is therefore forced upon us: *Organization* and *Control*, so badly needed, being impossible without the willing and active support and consent of those on whom the attainment of maximum efficiency will depend, this country must begin considering the matter of *Incentives*—NOW—not twenty-five years from now when it will be too late.

In providing incentives we should adopt the following:

1. Give the people steady employment.
2. Protect them from losses due to sickness, accident and old age.
3. Reduce industrial disputes.
4. Give them sufficient income.

As to employment, we should have a national bureau of employment under the direction of the Department of Commerce, this bureau to be in control of bureaus in the several states, the state bureaus to direct employment bureaus in the various cities. There should also be workingmen's hotels where men out of work could go at nominal cost, with provision, to be worked out by the government, for enabling men looking for work to travel at reduced fare on railroads, the same as is done in Germany. There should

be state and city farms for the derelicts of society, those unfortunates which constitute our "down and out" class. There should be city, state, and national movements like roadways, irrigation projects, canals, and waterways and the like to give men employment in times of depression or when there is a surplus of labor. These will solve the employment problem if the work is under the control of the government and in the hands of experts.

Now, regarding social insurance: Those dependent upon workers killed should be provided for. Compensation laws and accident insurance will take care of those injured. Sickness insurance is by all means the most important, as accidents cause only one-seventh and unemployment only one-fifteenth as much destitution as sickness. There should also be provision for old age.

Industrial disputes should be made the subject of the most careful study, and laws enacted and courts created to enable both capital and labor to get together and settle their differences. What sense is there in having costly disputes when over a period of fifteen years, 44 per cent. of the strikes have been won and 44 per cent. lost, the monetary loss to the world, due to strikes, being estimated at \$5,000,000,000 yearly?

Regarding income, let me submit an editorial from the *Boston Traveler*, entitled, "My Country, 'Tis of Thee:"

Why should there be unrest among the toilers? Why should coal miners and others who exist by manual labor demand more for their labor than they are now getting? Why this constant talk of strikes, when the country was never more prosperous and cash never in greater evidence? Take Palm Beach, for example, and listen to this important and enlightening intelligence telegraphed from "Society's" winter capital to the *New York Sun*:

"Money is being spent like water" in the restaurants, clubs, and shops.

Mrs. Hamilton Rice wore her famous pearl necklace, which cost \$500,000, at the Beach Club the other night.

Mrs. Edward T. Stotesbury has a necklace costing \$100,000 which will go three times around her neck.

Mrs. St. Cyr's necklace is not a third this length, but contains three pearls as large as English walnuts.

Mrs. Edward T. Westworth is a new figure here. She is said to have inherited \$80,000,000 from her father. She wears at the club a pearl necklace, for which she paid \$100,000, "but a strikingly beautiful one."

Mrs. John Martin of New York wears diamonds in the heels of her evening slippers, but it is said this style is not going to be copied.

Jewels in sight at the club the other night must be worth between \$10,000,000 and \$12,000,000.

Mrs. Edward E. Westworth wears on her engagement finger an eleven-karat diamond for which it is said she recently paid \$67,000.

## LESSONS FROM GERMAN INDUSTRIAL PRINCIPLES 111

Mrs. Walter Lewisohn wore a striking head-dress of diamonds, with a single fourteen-karat stone "strapped" to the middle of her forehead by a small platinum band.

Let those discontented mortals who are clamoring for what they call a "living wage" devote more time to reading the "society" news from Palm Beach and remember that a man may live nicely on less than \$2.00 a day and raise a large family if he does not indulge in unnecessary luxuries and "spend money like water."

I am not a socialist advocating an equal distribution of wealth, but I do say that if we consider the German military and industrial attainment on the one hand and her better distribution of wealth on the other, only one conclusion is possible: We must bring about a readjustment through income and inheritance taxes as a factor in insuring rewards to the 65 per cent. of the people upon whom industrial attainment depends and to whom we would have to look as workers or soldiers in case of war.

With adequate and reasonable incentives provided, education and training, both mental and physical, which means *Standardization*, can be taken up.

Without attempting to be sarcastic, let me give you a choice example of how education is regarded in some quarters:

WANTED—In large Eastern college, three instructors to combine teaching of shop work with practice of applied principles of scientific management. One to teach woodworking, one to teach forging, and one to teach partly in machine shop, and partly on thesis and factory layout work. Applicants must be graduates of an engineering college, willing to adapt themselves to prescribed methods and begin at as low a starting salary as \$1,000 to \$1,100.

In Germany, every boy between the age of six and fourteen must attend school for an average of 250 days a year as against our average of 144 days, their fourteenth year being devoted to vocational guidance. From fourteen to eighteen, the German lad goes to the continuation school. There are separate schools for the slow-minded, open-air schools for the sickly, and special work in the regular schools for backward students.

We must provide vocational guidance, continuation schools, night schools for workers and classes for the foreigners who come to our shores. Napoleon said: “In war men are nothing—it is the man who is everything.” Isn’t this also true in business? Then train him before he becomes a man and he will be one; train him after he becomes a man and he will be a better one.

Speaking of industrial education, Miner Chipman, counsel for the workers at the Watertown Arsenal, in the investigation of the Taylor system, said:

In the opinion of counsel, the first and primary principle of scientific management should be that of industrial education. I do not mean the industrial education accepted in the ordinary sense, I mean education for efficiency. I mean education for the broadest sphere of usefulness. Industrial education in connection with scientific management must mean more than a blue printed instruction card. The breaking up of crafts under scientific management is also breaking up some of our social formations. Industrial education must be more than the mere training for a particular piece of intensive production work. It must give the worker an adequate conception of his place in the whole process of manufacture. It must not stop with apprenticeship training. It must go on with an ever broadening scope. Industrial education is directly connected with scientific management. It must be made part of it.

Doctor P. P. Claxton, United States Commissioner of Education, said:

The children of to-day will have to face a fiercer democracy when they become men and women of to-

morrow, and unless they are fitted by a comprehensive vocational training to meet successfully the great complexities of life, which are bound to face them when they leave our schools, our educational system will have failed in its purpose.

In a recent address Wm. F. Redfield, Secretary of Commerce said in part:

A great German manufacturer once said to a friend of mine: "It is not our wages which make us dangerous. It is our organization." For in the German shop the head of the business is a master of his business, and from him down through the office, through the shop, down to the bottom, every man in the place is a master of his part of the business.

Those men are trained men. They know the what and the why of the work they have to do. Look into the organization of the schools of Germany and you will find the school system devoted to training—what? Training whom? The artisan at the benches in the factories. We are competing with specialists not at the top, but also at the bottom and all through when we are attempting to compete with the best of German industry.

Against that let us place a sad picture presented by certain great American industries, for example, in one very large establishment employing in all its branches some 24,000 hands. In this great estab-

lishment with 24,000 human souls employed, in one year there passed through the mills about 59,000 souls.

Finally, let me say that industrial education is not educating the men into the mill. I have been told that it was and that what was sought was to train a working class and that it not only attempted to train our children into the mills but to develop class legislation in their behalf. Both are utterly untrue. Industrial education is as broad as every phase of industry, and those who teach it most and urge it strongest do not wish it confined to any narrow groove of single processes.

Regarding physical training, let me submit the following by Frederick Palmer, in *Collier's*:

Universal service has meant the physical regeneration of Europe. British battalions of clerks and factory hands whom I saw at Aldershot with sunken chests and round shoulders in August, 1914, I saw eight months later at the British front with square shoulders and deep chests. As one British officer said: "What a pity that many of these men must be killed! If the war stopped here, it would mean that England has been regenerated."

Go over on the East Side of New York and watch the crowds. Go into an American town and see the loafers hanging around the street corners, and think

what a year's physical training—regardless of drilling with a rifle, for its own sake—would do for them! It would give them physical efficiency, definiteness of thought, pride, and a sense of discipline.

"But it means two years wasted out of a man's life!" some one argues. They argued that way in England before the war, but they don't now. Germany gave her men two years' training, and within the small space of her European empire she managed to feed and clothe nearly 70,000,000 people! France has gone back to three years' training, and yet the French people were probably the wealthiest per capita in the world before the war. The men gained something while they were with the colors that enabled them to make up for the time they were supposed to have lost once they applied themselves to civil occupations.

If the United States had universal service—universal physical training and say a year's military training for every young man—it would mean that we should be 20 per cent. more productive twenty years from now. For an example of the results of disciplined physical drill at home see the callow candidates for West Point before they enter and after they are graduated. Freshmen and seniors in no other college afford any such contrast. But universal service does not make for democracy, you say. What about France? The English new army men ought to know, and they are for it: those mil-

lions who did not know the manual of arms and enlisted at the call of danger.

It is obvious that with *Standardization* and *Incentives* taken care of, intelligent and comprehensive *Planning* and the proper coordination of all military and industrial effort, can be arranged for with dispatch, if there is superior *Organization*, using adequate and reliable *Records*.

Regarding *Organization*, let me submit the following by William C. Dreher, on "The German Drift Towards Socialism" in *The Atlantic Monthly*, July, 1911:

It is astonishing to what an extent the Germans have gone in organizing life in all its activities. The individual is everywhere learning that his independent strivings are ineffective both for himself and for society; that as a unit he counts for little. The working people long ago learned that they could better their position only through organization; and as united labor became more self-assertive in presenting its demands, the great employers of labor, the manufacturers of the country organized themselves for the purpose of protecting themselves from those demands. Now both employer and employee have surrendered their individual position, committing their rights to the organization, which acts in its collective capacity, in the interests of its mem-

bers; it fixes wage-tariff and the length of the day's work, it settles strikes and lockouts by treaty with the opposing organization, and in a hundred ways it absorbs and discharges the functions of the individual in his own behalf.

As an example of what is possible through *Organization*, let me suggest a careful reading of the following on the German military sock:

A German officer, who was visiting America, spoke of the way in which his people addressed themselves to war problems in time of peace. "Here is an excellent illustration," he said, and, lifting his foot, took off his shoe. From about his foot he then took, not the ordinary sock that men wear elsewhere, but a sort of napkin or handkerchief, which was carefully folded about it. "This," he said, "is the German military sock. It is the result of years of study and experiment by the best minds, not only in the German army, but in German science and medicine. During the Franco-Prussian war of 1870, when our armies were making forced marches around Metz and on to Sedan, our infantry was much impeded by sore feet. When it came to having a certain number of men at a certain point at a certain hour for a decisive stroke, we were usually from 10 to 30 per cent. short, because so many men had fallen out of the ranks from sore feet.

## LESSONS FROM GERMAN INDUSTRIAL PRINCIPLES 119

"We got through that war all right, for our enemies were as badly off in that respect as we were; but as soon as the war was over the government ordered every man in the service to turn his attention to contriving a form of footwear that would be more serviceable to the man of peace when suddenly called to war. It was years before the present sock was adopted. Thousands of dollars were spent in experimenting. Thousands of soldiers marched in all kinds of footwear, tested every possible kind of sock and stocking. After years of trial this form was chosen.

"There are about thirty different ways of folding this sock about the foot," he said, "and during his three years in the army the soldier is taught to become expert in using them all. Each manner of folding has a different purpose. One will relieve a soreness of the heel; another a weariness of the instep; a third will protect an irritated corn, and a fourth will relieve the inflamed ball of the foot. At the same time that the soldier is taught these different methods of wrapping the sock he also learns the anatomy of the foot and just why the different wrappings relieve the different foot ailments."

I am for a type of organization in industry and in military and naval affairs that will parallel the kind of condition just described, which concentrates the best brains on a given

problem; a type where both the worker and employer work hand in hand on matters affecting their mutual interests; a type which spells cooperation, the kind of cooperation Major Patrick F. O'Keefe so aptly defines as follows:

It is a fact, however, that the military achievements of the Teutonic allies furnish a terrible lesson in the power of cooperation in mobilizing for war the national forces of every kind and character.

Here in America the word cooperation generally suggests an effort to reduce the cost of living through the application of the system made famous by the mill workers of Rochdale seventy-five years ago. That we have failed heretofore to recognize its broader purpose is largely due to the individualism that has been characteristic of the growth of our national and industrial life. The time has come when the American business man, be he manufacturer or merchant, must substitute the principle of cooperation for the old-time idea of every man for himself and the devil take the hindmost.

From the previous articles you are familiar with the organization of the German military industrial machine. Read this by Frederick Palmer in *Collier's*:

An Englishman is willing that Parliament play politics with the army, but he will not permit it with the navy.

I am for a type of organization in industry and in military and naval affairs where there is a staff which studies and advises, supplementing the line which executes and performs; for a type where politics is entirely eliminated and where brains, ability, and experience reign supreme; for a type which will get down to "brass tacks" in solving the important problem before us.

In connection with this thought, read what Edwin F. Sweet, Assistant Secretary of Commerce, has to say:

We can meet European prices in the competitive markets of the world by developing factory efficiency. A great many manufacturers are conducting their business along antiquated lines.

In Europe wages are low compared with what we pay, but we can offset this. Instead of regarding the flood of gold pouring into the United States as easy money, our manufacturers ought to use these profits in the purchase of the latest and best machinery. Now is the time to get down to the strictest, bedrock principles of manufacturing.

Also consider the following by Roger W. Babson:

The employer in this country who has learned the importance of eliminating as far as possible unskilled

work from his plans will have an even greater advantage than that which he has already enjoyed. Machines and training must take the place of brute strength under the coming conditions. Those who have been contented with old-fashioned methods, requiring little skill and involving long hours and small pay, will find it necessary to open their shops to the newer ideas. The United States must depend upon a decided increase in the use of the science of management if it is to accomplish all of the work which the future will make possible for its shops and factories.

As no engine can be built until it has first been designed, it should be obvious that no organization can be created until an *Investigation* has first been made to determine parts, functions, and relationship. Investigation is the beginning of everything, as has been amply demonstrated not only in this chapter but in daily practice in varied lines of industry.

In other words, the adapting of the good Germany has to offer can be done through the use of the six principles developed in the foregoing pages: *Investigation, Organization, Records, Planning, Standardization, and Incentives*.

Let us take a few examples showing the value of *Investigation*. How many executives have ever attempted to match the fears

of labor regarding overproduction and the introduction of machinery with facts which show that this theory is more or less of a fallacy?

For, as Hull well says in "Industrial Depressions:"

On the other hand, to the industries there is no known limit; for it is impossible to produce the objects of permanent wealth more than man desires to possess or more than he is able to buy, and the products of the industries may be multiplied indefinitely within the borders of such nations as possess adequate deposits of coal and iron and have the energy and intelligence to use them with wisdom.

This is well proven by the following table showing the yearly production of automobiles:

1904 .....	21,700
1905 .....	25,000
1906 .....	34,000
1907 .....	44,000
1908 .....	85,000
1909 .....	126,500
1910 .....	187,000
1911 .....	210,000
1912 .....	378,000
1913 .....	485,000
1914 .....	515,000
1915 .....	703,527
1916 (Estimated).....	1,000,000

Miner Chipman, in his investigation for the workers at the Watertown Arsenal on conditions under the Taylor system in operation there, says of the stop watch:

After careful study of over two hundred statements, written by as many men employed by the government and working under the system at Watertown Arsenal, I found that the fundamental ground for complaint was not time-study or premium. Throughout these statements it was made clear that the objection to these devices of scientific management were based upon the method of introduction and administration and not upon the devices themselves.

What steps are being taken along lines of organization to correct the troubles found?

John P. Frey, editor of the *International Molders' Journal*, who served on the Hoxie Commission as the spokesman of Organized Labor, said:

It is my opinion that the inequalities, variations and contradictions which were found in establishments applying scientific management were due:

1. To the employers' desire to apply just that portion of the theory and rules of scientific management which they deemed most advantageous to themselves.

2. To the desire to secure the fullest output of their plant by the shortest cut and the lowest immediate 'labor cost.'
3. To the employer's personal viewpoint as to his relationship and duties to the workers in his employ.
4. To the extent to which the employer's knowledge of the laws governing production was balanced by a knowledge of the laws of economics and sociology.
5. To the extent to which the autocratic spirit is balanced by the employer's conception of industrial democracy in formulating shop rules and establishing the terms of employment and the conditions under which labor is to be performed.

The Hoxie report, which was examined and endorsed by both Robert Valentine and John P. Frey, contained the following in the conclusion:

*Our industries should adopt all methods which replace inaccuracy with accurate knowledge and which systematically operate to eliminating economic waste. Scientific management at its best has succeeded in creating an organic whole of the several departments of an institution establishing a co-ordination of their functions which had previously been impossible, and, in this respect, it has conferred great benefits on industry.*

Again, referring to the work of the Naval Consulting Board, Howard E. Coffin said:

There are three distinct initial steps. The first is to find out what American industry can actually produce in munitions of war. The second is to apply that knowledge in a practical way which will put the plants of this country into the service of the Government behind the army and navy. The third step is to form such an organization of skilled labor as will not get off the job when war comes; that will not allow skilled workers to go to the front only to be pulled back later, more or less demoralized, to tasks from which they should never have been taken.

If this is not *Organization* and *Control* based on *Investigation*, then I do not know what I am talking about.

Major Robert R. McCormick, in an article, "Ripe for Conquest," in *The Century Magazine*, said:

It is not surprising to find in Germany, where an emperor's word approaches absolute law, greater military efficiency than in democratic England, but we are surprised to find there greater patriotism; to learn that in *imperial Germany* the average man has received more from the state, the privileged man has paid more to the state, than in democratic Eng-

*land.* The strangest part of our discovery comes in realizing that the German achievements in equalizing conditions among the population have been more nearly copied in England than in the United States, and England's shortcomings are reproduced here in more acute form.

DO THEY MEAN US, WHEN THEY SAY—"WE HAVE EARS AND WILL NOT HEAR; EYES AND WILL NOT SEE?"



## CHAPTER VII

### THE PRACTICAL APPLICATION OF THE PRINCIPLES

It is up to us. We as a people will get out of the future what we prove worthy of getting. If there are misfortunes ahead of us, they will be of our own making.—FRANK A. VANDERLIP.

I HAVE been in the coal mines with the miner; I have pounded sand with the moulder; studied the machinist at all his machines; watched the blacksmith at his work; observed men butchering and dressing hogs; analyzed the work of girls making candy. I have studied the steel mill worker and his conditions; the glass worker making plate glass, bottles, and jars; the cabinet makers making office furniture, refrigerators, and doors; the men making wire products; the structural worker in all lines of work. Even the manufacture of ice cream, starch, and shirts has assisted in giving me valuable impressions.

What has this experience taught me? What

lessons did it point out? Not that this country has gone or is going to the dogs, but that it must take steps NOW to eliminate the things which make for waste, high cost of living, faulty cooperation, and the like—the basis of real Preparedness.

Vanderlip well says:

The position, the prosperity, the influence of the United States for the next twenty-five years will be tremendously influenced and, indeed, almost determined by the course we take in the next twenty-five months.

So let us wake up, and get busy. "But," you say, "we don't want German efficiency." Wait a minute. Read this by Theodore Roosevelt in *Metropolitan*:

Men who do not understand how Germany's industrial system is worked speak as if it were all done only by supervision and interference on the part of the government, and, in consequence, by the destruction of all individual initiative. This is not the fact.

In Germany the government does not interfere in the private affairs of a business except where it absolutely must; but it makes the men responsible for managing that business, take hold in conjunction with their employees and in conjunction with the

government authorities to see that justice is done. The employers and the representatives of the employees sit around a table and reach a decision as a matter of common sense and business, that was of common interest to all of them and to those they represented.

In order to explain what efficiency is *not*—efficiency in general and German efficiency in particular—let me quote Garet Garrett, special correspondent to *The New York Times*, as follows:

Efficiency is all of these things. There are other things it is not. For one thing, it is not infallible. If you had seen, shortly after the beginning of the war, a swine conference in Berlin, at which statisticians, physicists, chemists, agriculturists, commerzienrats, and one Government official sat down to determine just how many hogs would have to be killed at once to effect a permanent equilibrium between vegetable and animal food for men, with the certainty that their conclusion would be accepted as scientific and acted upon accordingly, you would have said, "That is German efficiency." And so it was. But they killed too many hogs, and were sorry, because new problems arose on that account, notably the problem of fat.

For another thing, efficiency is not miraculous. It is the natural consequence of interest, patience,

intelligence, industry, discipline, and perhaps also an inductive way of thinking. These are very common virtues and qualities, peculiar to no civilized people, and only perhaps somewhat more effectively combined and applicably developed among the Germans than among others. Interest is probably the item that deserves to stand first. If you are sufficiently interested in a thing you think about it so much that you end by having thought of its most hidden aspects; if you are less interested you miss and forget. If you are sufficiently interested you will take pains. If you are interested enough no trouble or sacrifice will be too great.

Thirdly, efficiency is not an end. It cannot be that. It is rather the means to an end. Efficiency mainly consists in doing the same things better and better, and if this be regarded as an end in itself, then at last people will become so preoccupied with the effort to do things better that they will never have the time or the mind to ask if those things are worth doing at all. Indeed, that is the disability of efficiency, that it may be pursued for its own sake, as an end. Critical curiosity about tendencies is diminished, processes tend to crystallize around the tendencies that are, and life becomes increasingly inflexible. For instance, Germany, having borrowed ideas of trade, industrialism, and colonial expansion from other countries, largely from England, became so engrossed in the undertaking by efficiency to excel her rivals that it never once occurred to her to

ask whether the empire business was worth while at all, and whether her economic necessities were necessities indeed, or mere ideas. England, on the other hand, being less efficient, has asked herself over and over if the empire game was worth its cost, and has actually thought of chucking it.

Efficiency is a jewel, but to possess it you have to pay a high price, so, alas! people will no doubt go on being only as efficient as they need to be to overcome the difficulties of their immediate environments and situations, and, as it cannot be an end in itself, but a means to some end, efficiency is not a people's errand.

I do not agree that efficiency is not a people's errand. *It is.* The problem before us is how to go about it in a practical way. Let us look at it from the standpoint of the state and nation first.

If an executive of a large industrial should run his business the way the business of the nation is managed, he would find himself hopelessly outdistanced by his competitors, which leads to this conclusion: *The nation must get out of politics and go into business.*

The business of an industrial is managed by one man or a group of men. The business of the country is more or less directed by forty-eight different managements—a

most absurd, illogical and inefficient way. Imagine, if you will, what would happen if the German Army and the British Navy were organized as this country is.

If we profit by the lessons which Germany can teach along lines of organization and control, then what this country needs, and promptly too, is not state but national organization and control for efficiency, economy, and uniformity of the following:

1. Incorporations,
2. Accident-prevention measures,
3. Industrial education,
4. Workmen's compensation laws,
5. Inheritance and income taxes,
6. Social insurance,
7. Tariff,
8. Management and labor,
9. Transportation and waterways,
10. Merchant marine,
11. Sanitation and health,
12. Employment,
13. Military and naval affairs,
14. Industrial disputes.

Fortunately the signs are pointing in the right direction. At a recent banquet of the New England Traffic Club, which was attended by such men as Howard Elliott of the New York, New Haven and Hartford, Ivy J. Lee of the Rockefeller Foundation, the

Traffic Commissioner of Nebraska and others, the slogan was—"One Boss and not Forty-eight."

In speaking of the need of a Federal Industrial Commission to deal with labor and management, Roosevelt said, in *Metropolitan*:

To remedy this situation, not by mere palliatives but by genuinely effective action, we must have a permanent body consisting of men far-sighted, experienced in statesmanship, of real independence, and of broad sympathies which are as far removed from silly sentimentality as from hard arrogance and lack of consideration for others. Such a body must represent the five interests that are embodied in every business, to wit: 1st, Ownership of Capital; 2nd, The Management of the Industrial Processes; 3rd, Labor; 4th, The Relation of Industry to the Individual States; 5th, The Relation of Industry to the National Government—the last two including the relation of industry to the general public.

Such a body must represent these five interests and compose the respective rights and duties of these five interests—and thus alone will there be secured that necessary unity of interest and purpose which is essential to our nation. This is an indispensable prerequisite to national preparedness in its fullest and truest sense. Only in this manner can we build the structure of military preparedness,

not upon the quicksand of labor insecurity, but upon the solid foundation of a healthy and reciprocally sacrificing and reciprocally serving citizenship.

If it is a good thing to have an Interstate Commerce Commission, a Federal Trade Commission, a Federal Industrial Commission, why not go further with it? This is the staff idea which has proven so efficient in Germany. And, in the formation of such a commission the basic considerations should be:

1. That men of experience and ability should be secured at sufficient salary to warrant their continued service;
2. That the commission should be permanent;
3. That politics and red tape be eliminated;
4. That there be speed in getting things done.

When the Declaration of Independence was signed there were only thirteen states, and inter-relationship was a simple affair in a country the basis of which was agriculture. To-day, there are forty-eight states, the relationship is complex, and its basis is industry. Consequently, we need, in matters effecting the people as a whole, not only more

national control but more business men in the saddle. We must get away from a condition that is, virtually, the same as doing business in forty-eight different countries; and we must also get away from a condition that permits a man to run for office who when called upon for a speech following his nomination says, "Well, I can't talk much, you know, boys, but I can set 'em up."

The thing I am leading up to is well expressed by Frank A. Vanderlip, as follows:

Suppose, if you please, that it were possible for a wise and benevolent despot to direct the affairs of this country for the next few years; what an opportunity he would have to place this nation rightfully and usefully in the van of the world's progress. He would threaten no existing industry, but breathe into every one a new confidence in its future. He would find a way to deal with piratical acts in the business field, without, in doing that, putting restraint on all enterprise and initiative and a clog upon all progress. He would see that the transportation systems of the country were brought up to the highest state of efficiency, but in demanding efficiency he would also recognize that these transportation systems serve every other industry, and that reasonable profits for the transportation lines is the truest economy for all interests. He would recognize

some of the great lessons that the war has taught, one of the most important of which is the tremendous efficiency that an industrial machine can attain if there is unity in its direction. And, lacking a benevolent despot, a wise and patriotic Congress and political administration could do all that.

But will they? The trouble with reading a book or listening to a lecture is that the person agrees that what is said should be done, but makes little if any effort toward working things out. We have had too much individualism to become really united all at once unless there is some definite direction behind it all.

And yet, when we read such things as the following by Major Robert R. McCormick, it should be evident to all that we must cut out some of the individualism and adopt a "get together" policy:

We know that within three weeks of obtaining command of the sea, England, Germany, France, Austria, or Japan can land from two hundred thousand to four hundred thousand men upon the seaboard of the United States and follow this up at the rate of two hundred thousand men a month indefinitely, and that to meet this invasion the United States has only thirty-five thousand trained men!

H. G. Wells, in an article, "What is Coming," in the *Saturday Evening Post*, eloquently expresses the thought in mind:

Now, Germany has taught the world several things, and one of the most important of these lessons is the fact that the destinies of states and peoples are no longer to be determined by the secret arrangements of diplomatists and the agreements or jealousies of kings. For fifty years Germany has been unifying the mind of her people against the world—she has obsessed them with a mistaken ideal; but the point we have to note is that she has succeeded in obsessing them with that ideal. No other modern country has even attempted such a moral and mental solidarity as Germany has achieved. And good ideals need, just as much as bad ones, systematic inculcation, continual open expression and restatement.

In applying the principles that have been mentioned, it seems necessary that, as regards industry as a whole, each large city should organize a League to Promote Industrial Preparedness, which will be to industrial activities what the National Security League is to military preparedness. These city leagues should form a state league, and the various state leagues a national body, which would control the work, conduct publicity

campaigns, and in a wise and efficient way influence national and state legislation. This league should cooperate in every possible way with the work now being done by the Naval Consulting Board.

The policies of these bodies should be in the hands of business men who would take counsel from the bankers and lawyers. The labor world should be represented in the deliberation of these leagues. We need, more than anything else in this country, a more business-like management of state and national affairs which we will never get until we throw some of the politics overboard—until the efficient commercial and business men, and not the politicians and ward heelers, get in and take hold.

As regards the units of industry—the various plants, railroads, etc.—each one should immediately begin the task of “putting his house in order” by organizing for greater efficiency; each one cooperating to the fullest with the League to Promote Industrial Preparedness and the Naval Consulting Board.

Each plant and each league can carry on its work through the use of the six principles mentioned in the manner indicated on the following page for both plant and league.

PRINCIPLE	PLANT	LEAGUE
Investigation	Find out what is wrong, where, and why;	Determine what Germany has done and what we are doing, as a basis for outlining a constructive program for industrial betterment in general.
Organisation	Organize the working forces from the executives down, in such a way as to enable each one to do his best work in carrying out what should be done.	Organize the activities of these leagues in such a way as to get Congress, the various state legislatures and the Naval Consulting Board to accept the counsel these leagues would give to them.
Records	Install such efficiency records as would enable each organization to work to the best advantage in carrying out the steps decided upon.	Organize the activities of these leagues in such a way as to get Congress, the various state legislatures and the Naval Consulting Board to accept the counsel these leagues would give to them.
Planning	Arrange for the kind of planning that would coordinate most efficiently all productive and distributive effort.	Organize the activities of these leagues in such a way as to get Congress, the various state legislatures and the Naval Consulting Board to accept the counsel these leagues would give to them.
Standardisation	Standardise the various activities so that there will be prescribed ways of doing things, as a basis of measuring attainment.	Organize the activities of these leagues in such a way as to get Congress, the various state legislatures and the Naval Consulting Board to accept the counsel these leagues would give to them.
Incentives	Reward those who perform efficiently in proportion to their attainment.	Organize the activities of these leagues in such a way as to get Congress, the various state legislatures and the Naval Consulting Board to accept the counsel these leagues would give to them.

The adoption of a program of this kind will mean real preparedness—preparedness against industrial inefficiency and industrial unrest and warfare. As President Wilson said: "The effect of the war upon the United States will depend upon what the American citizens say and do."

The war in Europe will not mean a total loss to the world by any means. To quote from Frank A. Vanderlip again:

Some fundamental lessons of great importance have been learned. The efficiency of a central direction that has come to be a little less than a vast experiment of state socialism is being tried, and the least that will come of that will be important lessons in cooperation and unity. Why should we not learn some of those lessons without paying the awful tax that has come with them to the belligerent nations? Why should we not come to see that a unity of purpose in our industrial life will be needed to meet the competition of the future, and that whatever contributes to effective industrial organization, to cheap production, to elimination of waste will eventually work to the good of all of our people? It is up to us.

It is obvious, if we review all that has been said in these chapters, that military preparedness becomes an empty phrase indeed

unless we have industrial efficiency, and without it we can do nothing but dream about commercial supremacy, and while dreaming, see England, France and Germany, deadly in earnest, with new conceptions of efficiency and economy; of organization and discipline; of control and coordination, walk off with the world's business.

If our vast wealth and money; if our wonderful material resources; if the mental capacity of our people are ever going to mean anything to us, we must begin now to harness them together.

James A. Emery, counsel to the National Metal Trades Association, spoke at the annual meeting of the body of the conditions which this country will face at the end of the war, as follows:

How shall we meet armies transformed into industrial organizations, unskilled labor raised to the zenith of capacity, women workers trained in large numbers to special dexterity and excellence, and management trained under the pressure of war and backed by a people drilled in self-sacrifice and self-denial to exercise in the contest of peace the virtues they have acquired in the discipline of war? Are we to meet this with high wage costs, short hours and low efficiency, while they attack us armed with low wage costs, long hours and high efficiency?

This country is at the parting of the ways. Will we go on wasting; ignoring the lessons the past can teach us; forgetting there is a saying "live and let live"; refusing to co-operate, or will we organize and control, basing what we do on right analysis and investigation, with humanitarian ideals as our guide, and in this way attain that position so eloquently pictured by Lewis D. Froelick in an article, "Have We the Price of Admission," recently published in *Everybody's Magazine*:

Can you not see the harbor crowded with shipping, much of it carrying the United States flag? Does it push the imagination to see a busier industry along the Jersey flats, the Brooklyn water-front, Manhattan—extending back into the land? An aroused industry on the Pacific Coast supplying China with manufactured goods from the coal, copper, and other resources of an opened Alaska? Is it too much to expect, through greater foreign market development, a time when the sign "No Help Wanted, Factory Closed," will be seldom seen, when times of depression here will be met by an active demand from abroad, and the reverse? Can one not picture a great deserted section in the heart of New York turned into a miniature world market, with exhibition halls crowded with home manufactures, the products of new countries abroad, their buyers

and sellers, our manufacturers and merchants, in close relations each day?

Will it be strange to hear, in the gossip of Wall Street and finance, quotations on Argentine Rails, Russian Industrial, Chinese Oils and Coalers, bandied about as familiarly as Steel, Union Pacific, General Motors?

Will one inquire why his banker is found reading morning cables from Buenos Aires, Peking, and Shanghai, Bombay and Petrograd, along with full despatches from his London, Paris, and Berlin branches? Will it be surprising to find local murder stories crowded off the front pages of newspapers by despatches about American successes in new foreign lands? In public gatherings, clubs, political party councils, will there not be new interests centered in the groups of men returned from distant lands, alive to our big opportunity, our bigger responsibility abroad, through their man-to-man contact with other races?

Roosevelt's "Fear God and take your own part," can well be changed to "God help the man who fails to do his part."

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